



General Management Plan  
Amendment  
Draft  
Environmental Impact Statement

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**BISCAYNE NATIONAL PARK**

**Florida**

## HOW TO COMMENT ON THIS PLAN:

Comments on the *Park General Management Plan Amendment/Draft Environmental Impact Statement, Biscayne National Park* are welcome and will be accepted through February 13, 2003. You can submit your comments on paper or electronically.

Send written comments to:

National Park Service, Biscayne National Park  
Superintendent  
9700 S.W. 328th Street  
Homestead, Florida 33033-5634

If you provide comments via the Internet, please be sure to include your name and return street address in your Internet message. You may comment electronically via the Internet (e-mail) by sending comments to:

Bisc\_stiltsville@nps.gov

Please note that names and addresses of people who comment become part of the public record. **If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, from businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety. This draft environmental impact statement will be on public review for 60 days after the U.S. Environmental Protection Agency has accepted the document and published a notice of availability in the *Federal Register*.

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**Draft**  
**Biscayne National Park General Management Plan Amendment**  
**Environmental Impact Statement**

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**BISCAYNE NATIONAL PARK**

Homestead, Florida

This *General Management Plan Amendment/Draft Environmental Impact Statement* evaluates four alternatives for the future management of Stiltsville. It defines the strategies that will allow for diverse public use of Stiltsville, protect resources in the vicinity of the stilt structures, protect the public's health and safety, and establish a financial framework for reducing the park's costs for maintaining the structures.

Under Alternative A, the preferred alternative, a non-profit organization would be created along with an appropriate agreement with the National Park Service and other groups for the management and use of the Stiltsville structures. The Stiltsville organization would rehabilitate the buildings to support education and interpretation opportunities. Under this alternative, Stiltsville also may provide a visitor and interpretive center, research facilities, an artist-in-residence dwelling, meeting space, and a satellite park office that would provide for National Park Service presence in the northern part of the park.

Alternative B would result in the National Park Service being responsible for the renovation, management, and operation of the Stiltsville structures. The designated uses of the structures would be similar to Alternative A.

Under Alternative C, the structures would be leased for private use based on current authorities. Potential lessees would compete for the right to lease the structures. The size or footprint of the structure would not be expanded. The purposes for which the structures could be leased is similar to Alternative A as well as for private uses similar to those under the former non-renewable leases. Preference would be given to individuals or groups that would provide for some level of public access.

Alternative D, the no action alternative, would implement the provision of the non-renewable leases that calls for the removal of the structures from the Stiltsville area.

The potential environmental consequences of the actions are addressed for each alternative, including impacts to natural resources, cultural resources, visitor experience and safety, visual resources, socioeconomic resources, and park operations.

This draft environmental impact statement will be on public review for 60 days after the U.S. Environmental Protection Agency has accepted the document and published a notice of availability in the *Federal Register*. The final date for public comments will be February 13, 2003. All review comments must be received by that time and should be addressed to:

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## EXECUTIVE SUMMARY

### OVERVIEW

Biscayne National Park encompasses a large portion of Biscayne Bay and the offshore waters south of Miami in Miami-Dade County, Florida. The park's established boundary includes approximately 174,000 acres. The area that includes Stiltsville was included in a boundary expansion of the park in 1980. In 1985, the submerged lands on which the structures were built were deeded to the federal government as part of Biscayne National Park. The park preserves a unique, sensitive marine environment that is an important component of the south Florida ecosystem and economy. In the northern portion of the park, seven structures constructed on pilings collectively referred to as Stiltsville currently exist. The first structure was constructed in the 1930s, and the number of structures rose to a peak of 27 by the 1960s. Natural events such as hurricanes and storms reduced the number to 14 by 1976 when the state of Florida entered into leases for the lands on which the structures existed with private individuals and groups. Hurricane Andrew irreparably damaged 7 of the 14 structures that were present at that time, leaving seven remaining, none of which existed during the area's heyday. The National Park Service honored the leases on these structures until they expired in 1999. Since then various agreements between former leaseholders and the National Park Service have been established until a decision for use and management of the area is developed.

### PURPOSE AND NEED

The purpose of this *General Management Plan Amendment and Draft Environmental Impact Statement* is to evaluate the effects of several alternatives for the long-term management of the Stiltsville area within Biscayne National Park to ensure the protection of resources and public safety while allowing a range of recreational opportunities to support visitor needs.

In 1980, Congress expanded the northern boundary of Biscayne National Monument and redesignated the area as a national park. However, the submerged lands within the expansion area were owned by the state of Florida until 1985 when they were transferred to the federal government. The leases for the Stiltsville structures held by organizations and private individuals then became the responsibility of the National Park Service. In 1983 the Biscayne National Park general management plan stated that the leases were non-renewable and that the structures would be removed at the leaseholders expense when the leases expired in 1999.

Because of the high level of public interest in the future of Stiltsville, the federal government and the leaseholders have entered into a series of standstill agreements and settlement agreements. Currently the National Park Service is managing the use of the structures under special use permits that expire in December 2002.

Past use of the Stiltsville structures has been limited exclusively to the individuals and organizations that held leases and to their guests. Changes in the management and use of these structures presents an opportunity for the park to enhance its mission to bring about awareness of the unique natural and cultural resources and history of the bay to visitors who would otherwise have limited access to the marine environment.

The expressions of support to use the structures for education, visitor services, and enjoyment have led the National Park Service into a multi-stage planning process to identify future public uses. The first phase of the planning process was the creation of the Stiltsville Committee of the National Park System Advisory Board. The development of this *General Management Plan Amendment and Draft Environmental Impact Statement* marks the second phase of this effort.

The amendment to the general management plan is needed to define the strategies that will allow for diverse public use of Stiltsville while protecting the resources of the park, in particular those immediately adjacent to the structures and within the Safety Valve area. Due to benign neglect in recent years, the structures are in various degrees of disrepair. The amendment will require that structures be rehabilitated to protect the health and safety of visitors to the structures using sustainable, environmentally compatible design principles. The amendment will also establish a framework that would allow the structures to become financially self-supporting.

Specific issues that are addressed in this plan include:

Minimizing resource damage to the sensitive estuarine environment from motorized boat access to the structures, other uses of the structures, and the presence and handling of waste and hazardous materials on the structures.

The capability and suitability of the structures to support public use.

Removal of the structures in the event of significant damage resulting from storms, fire, or other non-maintenance related situations, following a process to determine whether structures should be removed or repaired.

Management of the structures that could allow them to be financially self-supporting.

## **THE PARK PURPOSE, MISSION, AND SIGNIFICANCE**

The purpose, mission, and significance of Biscayne National Park, based on the park's enabling legislation, provide the general direction for each alternative. Statements of the park's purpose, mission, and significance currently are being revised in association with a full update to the park's general management plan that is not yet in draft form and has not been released for public comment. (Statements of this type were not included in the park's current general management plan, which was prepared in 1983.) The draft statements are reproduced below to provide the reader with adequate background when examining the summary of the alternatives and the environmental consequences.

### **Purpose**

According to the park's legislation, the purpose of Biscayne National Park is "to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty." This same statement is proposed as the park purpose statement in the updated general management plan.

## **Mission Statements**

In the updated general management plan, the three missions of the park are defined as follows:

Conserves the rare combination of Florida coral reefs and keys, estuarine bay, mangrove coast, the wildlife, associated habitats, and the historic elements contained within them.

Exemplifies responsible stewardship and fosters responsibility and stewardship within others.

Enables visitors to experience tranquility, scenic vistas, compatible recreation, and the underwater environment.

## **Significance Statements**

Biscayne National Park is significant in that:

The park's fabric of Florida coral reefs and keys, estuarine bay and mangrove coast is an integral part of the south Florida ecosystem and the wider Caribbean community providing a place where diverse, temperate and tropical species mingle.

Consistent with the park purpose and values, and the National Park Service Organic Act, visitors enjoy opportunities for a multitude of recreational activities in proximity to one of the country's major metropolitan centers.

Visitors find inspiration in Biscayne's tranquility, solitude, scenic vistas, underwater environment, and the sounds of nature's voices.

The park encompasses the northernmost extent of fragile and dynamic Florida coral reefs and coastal systems and is characterized by transitions in the physical and biological environment.

The park preserves a largely undisturbed gene pool of tropical and subtropical flora.

The park provides a rare opportunity to experience largely undeveloped Florida Keys surrounded by clear tropical waters and fresh sea breezes.

The park preserves unique marine habitats and nursery environments that are capable of sustaining diverse and abundant native fisheries.

The cultural history found in the park is inextricably linked to the natural environment. The submerged and terrestrial resources represent a continuum of rich history and a melding of diverse cultures from prehistoric times to today.

The park offers outstanding opportunities for education and scientific research due to the diversity, complexity and interrelatedness of the natural and cultural resources and provides a dynamic laboratory for study and learning.

## ISSUES

Public scoping identified several environmental issues that should be addressed in the conceptual site plan. The National Park Service interdisciplinary team identified the following issues through public meetings, internal and external scoping, and meetings with stakeholders. Each issue is analyzed in this environmental impact statement:

- Water quality
- Biological resources
- Endangered or threatened species
- Ecologically critical areas
- Cultural resources
- Visitor experience and safety
- Soundscape
- Visual resources
- Park operations
- Socioeconomic resources

## OVERVIEW OF ALTERNATIVES

Four alternatives were analyzed for impacts of actions on the environment and are described briefly below. The “Alternatives” section provides a complete description of the alternatives.

### **Alternative A: Proposed Action –Non-Profit (IRS 501 (C) (3)) Organization Development and Management to Provide for Public Use**

Under Alternative A, one or more organizations or individuals may create a non-profit organization under the regulations of the Internal Revenue Service and non-competitively enter into an appropriate arrangement with the National Park Service for the management and use of the Stiltsville structures. The Stiltsville organization would develop, manage, and maintain the seven existing Stiltsville structures to provide broad public access and diversity of use consistent with National Park Service policy and best management practices for environmental protection. Alternative A would include a mix of uses that may include:

- Public functions and services including non-profit organization functions, public and private education programs, scientific research activities, an artist-in-residence program, professional meetings and retreats, and rustic campsites.

- National Park Service functions, including interpretation, resource management, and ranger activities.

Public functions may be provided by other entities through agreements with the Stiltsville organization. The organization would seek donated funds and grants from a wide variety of people and organizations or funds from entities participating with the organization to repair, rehabilitate, and operate the buildings at Stiltsville to support the intended uses. They may also generate funds for these purposes through user fees.



## **User Capacity**

A user capacity would be set for each structure according to the type of designated use.

## **Protecting Park Resources**

Measures would be employed to minimize the effects of use of the structures on the environment. Water access to the sites would be limited to a specific number of boats, to specific types of user groups, or to vessels operated by trained persons to navigate the fragile environment. This plan would encourage the use of four-cycle direct fuel injection engines and non-fossil fuel oils on boats to minimize the amount of pollution being emitted into the air and water.

Best management practices during construction, operations, and maintenance of the structures would minimize adverse impacts on park resources. For example, users of the structures would not be allowed to store hazardous or toxic materials on the structures except in limited quantities. Non-toxic construction materials would be used during rehabilitation of the structures. Sanitary wastes would be strictly controlled and appropriate storage and disposal methods employed.

## **Conditions for Removal**

This plan would provide a decision framework for determining whether a structure should be removed or rehabilitated in the event the structure was severely damaged in a storm or other event.

## **Protecting Health and Safety**

Regulating the proper storage and disposal of hazardous materials, sanitary wastes and trash would further protect public health and safety. The structures would be rehabilitated, based on relevant building codes, using designs that would provide adequate protection for users of the structures, including visitors with physical disabilities. The potential for increased presence of National Park Service law enforcement in the northern portion of the park would further enhance protection of the public.

## **Sustainable Environmentally Compatible Design**

Renovation of the structures would be accomplished using materials that are non-toxic to the environment. Design elements such as wastewater storage systems and solar power would be employed to enhance the environmental compatibility of the structures.

## **Financial Responsibility**

Uses of the structures would be financially self-sustaining. Agreements between the Stiltsville organization and partnering organizations would be executed to ensure that management and maintenance costs are borne by the user organizations, or some of the costs could be borne by the organization with the exception of the structure(s) utilized by the National Park Service. Fees may also be retained to help offset costs of operations. The organization would bear the initial costs to renovate the structures. Depending on the intended use of the structures renovation would range from primitive facilities with minimal or no services to structures that could provide

visitors with potable water, bathrooms, minimal lighting or running water. The costs for renovation would range from \$200,000 to \$500,000 per structure.

### **Alternative B: National Park Service Development and Management to Provide for Public Use**

Under Alternative B, the National Park Service would renovate, manage, operate, and maintain the seven existing Stiltsville structures. The range of uses and costs under this alternative would be similar to Alternative A, including the availability of some structures for use by private individuals or groups through a park reservation system.

User capacity, conditions for removal (hurricane damage or fire) and actions related to protecting resources, protecting public health and safety, and sustainable environmental design principles would be similar to Alternative A.

### **Alternative C: Competitive Leasing to Provide for Public and Private Use**

If an acceptable non-profit organization cannot be found, this alternative would become the preferred. The Stiltsville structures, with the possible exception of one structure designated for National Park Service use, would be competitively leased for private use based on current authorities (36 CFR, Part 18 as amended by regulations published in the *Federal Register* on December 27, 2001). The National Park Service would issue, approve, monitor, and enforce the leasing program. All potential future lessees, including the former leaseholders, would compete on the same basis for the right to lease these structures. The purposes for which the structures could be leased would be similar to the range of uses defined in Alternative A, as well as for private uses similar to those under the former non-renewable leases. The Request for Proposal (RFP) would include scoring factors weighted towards responses from individuals or groups that would use the structures for park mission type purposes.

As in Alternative A, the National Park Service could exercise the option of renovating, operating, and maintaining one structure to establish a presence in this northern portion of the park to monitor and enforce the leasing program and provide user information and limited interpretive programs.

If a sufficient number of lease proposals are not received that would allow for public use or designate uses that meet the park mission, then leases could be granted to individuals or groups for their exclusive use. The nature and frequency of use by these groups would not differ substantially from practices that have occurred since 1985 when the National Park Service acquired the land on which the structures are built.

All future leaseholders, regardless of type of use, would be responsible for renovating, operating, and maintaining their respective structures to specified standards set by the National Park Service. Costs for renovation would be similar to the costs under Alternative A. Leaseholder responsibility would also include the purchase of liability insurance and the costs of repairs and maintenance of these structures. Leases would include the following types of stipulations:

The leased premises would be used only for purposes prescribed in the lease.

The lessee would not expand the size or footprint of the structure.

The lessee would agree to maintain the structure in a reasonably sound, livable, and attractive condition and would be required to meet state and federal health and safety codes.

#### **Alternative D – No Action – Removal of Structures**

Under this alternative, at the end of the Special Use Permit or any extension of that agreement, the National Park Service would require the implementation of the provision contained in all the non-renewable leases at Stiltsville that call for the removal of all man-made structures from Biscayne National Park.

Demolition of the structures and removal of material would adhere to standards set by the National Park Service. These would include operation and anchoring of barges, containment of silt and minimization of bay bottom disturbance, and containment of demolished material. Standards would ensure the least damage to park resources.

Management and operations within the northern portion of the park would occur similar to current conditions. Operations for all division functions including Resource and Visitor Protection, Interpretation, Resource Management, Science, and Maintenance would originate from park headquarters and the Dante Fascell Visitor Center, the park's main visitor center. These are located at Convoy Point in the southwest part of the park, approximately 22 miles from Stiltsville. Staff would access the site and conduct park operations in the Safety Valve area from boats after traveling for Convoy Point. This would include transport of equipment and staff and would involve minimum response times to needs in the area from 30 to 60 minutes. Contact with visitors in the Safety Valve area would take place intermittently when staff are available in the area. Interpretation of resources that are present in and important to this portion of the park would take place at the Dante Fascell Visitor Center.

Bay resources such as seagrass beds that have been disturbed or degraded by the long-term presence of the structures would be restored or, where feasible, allowed to return naturally.

Costs to demolish the structures and remove materials would range from \$100,000 to \$150,000 per structure depending on the structure's size and location.

#### **Environmentally Preferred Alternative**

The environmentally preferred alternative is defined by the Council on Environmental Quality (1978) as the alternative that best meets the criteria or objectives set out in Section 101 of the National Environmental Policy Act. The environmentally preferred alternative best meets the following requirements:

Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

Ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.

Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

Preserve important historical, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.

Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.

Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment — the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. This discussion also summarizes the extent to which each alternative meets Section 102(1) of the National Environmental Policy Act, which asks that agencies administer their own plans, regulations, and laws to be consistent with the policies outlined above to the fullest extent possible.

Alternative A would satisfy the majority of the six requirements detailed above. Implementation of the alternative would offer protection of the surrounding bay environment through implementation of best management practices for maintenance and operations of the structures and through controlled access to and use of the structures. Operating requirements would include recycling and use of renewable energy sources. Additionally, increased public education and enhanced research would improve the public's knowledge and appreciation of Biscayne Bay. The Stiltsville non-profit organization would act to improve the structures to enhance public safety and access to the structures within the surrounding seascape, and would provide a wide range of beneficial public uses for civic and youth groups, the general public, the research and education communities, and National Park Service park administration. This would occur in a manner that was sustainable within the bay environment. Through enhanced access for the general public regardless of affiliation with a particular group, a broad range of community members would be able to visit and benefit from the Stiltsville structures and their location within a protected natural environment.

Alternative B would have impacts on park resources and visitor use and experience at Biscayne National Park very similar to those described for Alternative A. Management of the site by the National Park Service would place a greater portion of the costs of rehabilitation and operations on the federal government.

Alternative C would also have impacts on park resources and visitor use and experience similar to those described in Alternative A; however, realization of many of the public benefits described in Alternative A would depend on viable bids to provide public access being offered to and accepted by the National Park Service from private individuals or entities. A high number of leases offering services similar to those provided under Alternative A would result in broad public benefit. Leases that provide only exclusive private use would serve to limit public access and thus the public benefit that would be provided by the Stiltsville structures.

Alternative D would remove the structures and would provide the greatest potential to restore the bay's natural resources and protect them over time. However, to many in the Miami community, Stiltsville is an important and distinctive icon of past and present life in south Florida. The symbol and the structures of Stiltsville have varying meanings within the community, ranging

from a reminder of the old social club era to a contemporary “quirky” element of today’s Miami. This alternative would remove the structures from the surrounding seascape and eliminate the contribution many feel that they make. Removal of the structures would eliminate the opportunity for the public to experience Stiltsville and learn of its stories and would reduce the opportunity to use the structures and their location to enhance public understanding and appreciation of the bay environment and Biscayne National Park.

Based on the environmental analysis prepared for management of the Stiltsville structures, Alternative A is considered the environmentally preferred alternative, best fulfilling park responsibilities as trustee of the outstanding natural resources, including critical habitats for threatened and endangered species; ensuring safe, healthful, productive, and aesthetically and culturally pleasing surroundings; and attaining a wider range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

## **ENVIRONMENTAL ANALYSIS**

Impacts of the four alternatives were assessed in accordance with *Director’s Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis and Decision Making*. This handbook requires that impacts on park resources be analyzed in terms of their context, duration, and intensity. The analysis provides the public and decision makers with an understanding of the implications of management actions in the short and long term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists. For each impact topic, methods were identified to measure the change in park resources that would occur with the implementation of each alternative.

The following table summarizes the results of the impact analysis for the impact topics that were assessed.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Water Quality	The continued use of structures would result in a negligible to minor adverse impact to the water quality in the surrounding area. Long-term, indirect beneficial impacts would result from educational, social, and research programs that would be initiated under this alternative. Activities associated with Alternative A would contribute negligibly to the cumulative adverse effects on water quality resulting from increased urbanization and recreation in south Florida.	Same as Alternative A.	Same as Alternative A.	Demolition of structures would result in localized, short-term, negligible to minor adverse affects on water quality. A reduction of watercraft traffic in the area would represent a negligible to minor, long-term benefit to water quality. Minor to moderate long-term benefits would also accrue from the elimination of spills, sewage, or hazardous materials entering the water associated with use of the structures. There would be long-term, indirect, adverse impacts resulting from a lack of educational, social, and research programs with implementation of the no action alternative. The cumulative effects of this alternative would be beneficial and negligible.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Biological Resources	Use of the structures and watercraft in the area would result in adverse, long-term, localized and negligible to moderate effects to biological resources. Construction noise may displace wildlife or disrupt behavior that would be considered a localized, temporary and negligible to minor adverse effect. Adverse cumulative effects from implementation of Alternative A on biological resources would be negligible.	Same as Alternative A.	Same as Alternative A.	Long-term, negligible to moderate, beneficial effects would accrue with the removal of structures from improved water quality and seagrass habitat. Demolition activity would result in negligible to minor, localized and temporary adverse effects by disturbing and/or displacing wildlife and habitat. The beneficial effects of this action negligibly supports the actions implemented by other agencies to restore and protect Biscayne Bay.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Endangered or Threatened Species	Use of structures and watercraft access would cause undesirable effects on critical habitat in the Stiltsville area. With increased National Park Service presence in the area to enforce watercraft regulations, the short- and long-term adverse effects on endangered and threatened species would be negligible. Educating the public about the consequences of their activities on protected wildlife and their habitat would reduce impacts in the future. The implementation of Alternative A would have long-term negligible cumulative adverse impacts on endangered and threatened species, and their habitats.	Same as Alternative A.	Same as Alternative A.	The long and short-term effects of the no action alternative on endangered or threatened species would be localized and negligible. The beneficial impacts on endangered and threatened species would include preservation and enhancement of their habitat. The cumulative effects of this plan and others to improve water quality and clarity in Biscayne Bay would result in minor beneficial effects on federal- and state-listed species.



### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Ecologically Critical Areas	Construction activity would result in indirect negligible to minor short-term impacts to ecologically critical habitats. Use of boats to access structures would continue to cause undesirable effects on seagrass beds and substrates representing a localized, long-term and minor to moderate adverse effect to this essential fish habitat. Long-term, adverse effects on ecologically critical areas from discarding of wastes into the environment would be minor. Educating the public about the consequences of their activities on fragile estuarine ecosystems would probably reduce adverse effects to them in the future. Negligible cumulative effects would occur with this alternative.	Same as Alternative A.	Same as Alternative A.	Localized effects to the ecologically critical areas during structure removal activities would be negligible to minor and short-term. The localized long-term beneficial effects of Alternative D on essential fish habitat in the area would be minor to moderate with a reduction in boating activity. The cumulative effects of this plan and others improve water quality and clarity would result in a minor to moderate beneficial effect on ecologically critical areas in the bay.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Cultural Resources	Negligible long-term adverse impacts on submerged cultural resources from construction activity. Negligible to minor localized long-term adverse effects to cultural resources would result from the continued use and access to the structures compared to the no action alternative. The cumulative effects to cultural resources would be adverse and negligible to minor.	Same as Alternative A.	Same as Alternative A.	The removal of the structures would result in the loss of an opportunity to present the history of the area in the unique environment of Stiltsville. The demolition activities would result in long-term negligible to minor adverse impacts to submerged cultural resources. Reduced visitor use of the area after structure removal would result in long-term negligible to minor benefits to submerged cultural resources in the area. The cumulative effects to cultural resources would be adverse and negligible to minor.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Visitor Use and Experience and Visitor Safety	Long-term, minor to moderate, beneficial effects by providing for a broad range of public uses and opportunities for continued public enjoyment of Stiltsville. Increased presence of park staff would provide enhanced public awareness of Biscayne National Park and long-term, minor to moderate benefits. Long-term, minor to moderate, beneficial effects on visitor health and safety would result from increased staff, additional controls on boating practices, and physical structural and safety improvements to the structures. Moderate to major, cumulative effect.	Same as Alternative A.	Long-term, minor to moderate, beneficial effects to the extent that leases provide for a broad range of public uses and opportunities for continued public enjoyment. Increased presence of park staff would enhance public awareness of Biscayne National Park, with long-term minor to moderate benefits. Long-term minor to moderate, beneficial effects on visitor health and safety would result from increased staff, additional controls on boating practices, and physical structural and safety improvements to the buildings. Moderate to major, cumulative effect.	Minor to moderate beneficial effects for visitors seeking quiet passive experiences in the Stiltsville area. The removal of the structures would add negligibly to the amount of open water available for visitor use. Improvements to the natural seascape would offer minor to moderate, beneficial effects for those who appreciate natural settings. For those who have used or have been associated with the structures, long-term, adverse effects to their experiences relative to Stiltsville would be moderate to major. Minor, adverse effects would result from the elimination of opportunities for environmental education and opportunities. Beneficial effects on visitor safety would be negligible to minor. Cumulative effects on visitor experience and safety would be negligible to minor.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Soundscape	Noise generated from renovation/construction activities and routine maintenance of the structures would have a direct, localized, short-term, minor to moderate adverse effect on the natural soundscape. The noise level generated by public and/or private boating access and use of the structures would have a direct but localized, long-term, minor to moderate adverse effect on the natural soundscape. There would be a negligible, adverse cumulative effect on soundscape.	Same as Alternative A.	Same as Alternative A.	Implementation of Alternative D would have direct, short-term, minor to moderate adverse effects on soundscape in a localized area during demolition activities. After removal of the structures there would be a direct, long-term, minor to moderate, beneficial effect in this localized area because noise associated with boating access and use of the structures would be eliminated. Removal of the structures would have a negligible to minor beneficial cumulative effect on the natural soundscape.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Visual Resources	In the short-term, the renovation of these structures would have direct, negligible to minor adverse effects on the visual resources because of the construction activities. In the long-term, the retention and use of these structures would have a direct and localized, negligible, adverse or beneficial effect, depending on the perception and values of the individual viewing the scene. In the context of the urban/coastal environment that surrounds the bay, the structures would have a negligible or minor adverse cumulative effect on visual resources.	Same as Alternative A.	Same as Alternative A.	In the short-term, the removal of these structures would have direct, negligible to minor adverse effects on the visual resources because of demolition activities. In the long-term, the removal of the structures would have a direct and localized, negligible to minor beneficial or adverse effect, depending on the perception and values of the individual viewing the scene. The cumulative adverse effects of this alternative would be generally considered negligible or minor.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Park Operations	Alternative A would have a direct, long-term, negligible to minor adverse effect on the financial and staffing component of park operations because of the associated development, operation, maintenance, and staffing costs with the possible rehabilitation and use of a structure as a satellite park ranger office/interpretive contact facility. However, if law enforcement were improved under Alternative A, improved visitor/resource protection, public health and safety functions and decreased response time to this northern portion of the park would provide a direct, minor beneficial effect because of the increased long-term National Park Service presence.	Alternative B would have a direct, long-term, moderate adverse effect on National Park Service operations by substantially increasing both the financial and staffing burden on National Park Service operations. This alternative would maximize the National Park Service presence in this heavily used northern portion of the park and would have a direct, long-term moderate beneficial effect, allowing reduced response time for emergencies, improved monitoring for better resource protection needs, and the expansion of law enforcement, visitor protection, and public health and safety functions.	Alternative C would have a direct, long-term minor adverse effect on park operations due to the capital development costs associated with rehabilitation of stilt structures used for National Park Service purposes, increased costs of additional National Park Service staff necessary to monitor users and manage the competitive lease program. However, if law enforcement were improved under Alternative C, improved visitor/resource protection, public health and safety functions and decreased response time to this northern portion of the park would provide a direct, minor beneficial effect because of the increased long-term National Park Service presence.	Removal of the Stiltsville structures would have a direct, long-term moderate beneficial effect on the financial component of National Park Service park operations because this action would eliminate any future need to expend National Park Service funds to renovate or preserve these structures. Likewise, this action would eliminate the need to provide additional staffing to manage any future use that might be considered for these structures. However, there might be a potential direct, short and long-term, moderate adverse effect on law enforcement, visitor/resource protection, and public health and safety park operation functions in this northern portion of the park, if National Park Service were to ignore the need for an increased presence due to the removal of these structures.

### SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Socioeconomics	Implementing Alternative A would have long-term negligible to minor beneficial effects to the local economy. There would be no adverse or beneficial effects to concessions within the park. The mix of public uses proposed under Alternative A would provide long-term minor socioeconomic benefits by increasing the opportunities for the public, including the economically disadvantaged, to access the structure and gain an appreciation of park resources.	Same as Alternative A.	Alternative C would have long-term, negligible to minor beneficial effects on the local economy. There would be no adverse or beneficial effects to concessions within the park. Alternative C would also provide long-term, negligible socioeconomic benefits from increased opportunities for the public, including the economically disadvantaged, to access the structures.	Removal of the structures would have short-term negligible to minor beneficial effect on local business related to construction activity. Removal of the structures would eliminate the opportunity for public use and educational opportunities to increase public awareness of the history and ecology of the area. This would result in long-term minor adverse socioeconomic effects.





# **TABLE OF CONTENTS**

## **Executive Summary**

### **Purpose and Need for the Plan**

Purpose of the General Management Plan Amendment 1

Need for the General Management Plan Amendment 1

Geographic Area Covered by the Plan 6

Park Purpose, Mission, and Significance 6

Background 9

Impact Topics 12

Water Quality 13

Biological Resources 13

Endangered or Threatened Species 14

Ecologically Critical Areas 14

Cultural Resources 14

Visitor Experience and Visitor Safety 15

Sound Environment/Soundscape 15

Visual Resources 15

Park Operations 16

Socioeconomics 16

Issues Eliminated from further Discussion 16

Connected, Cumulative, and Similar Actions 18

Cooperating Agencies 18

Connected and Similar Actions 18

Cumulative Actions 19

### **Alternatives**

Formulation of the Alternatives 21

Formulation of the Proposed Action 21

Formulation of the No Action Alternative 21

Consideration of Other Alternatives 22

Mitigation 22

Alternative A: Proposed Action – Non-Profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use 23

Concept 23

Public Functions 23

National Park Service Functions 24

User Capacity 25

Protecting the Resources of the Park 25

Access 25

Fuels, Hazardous Material and Waste 27

Other Resource Protection Measures 27

Conditions for Removal of Structures 27

Protecting Health and Safety of the Public 27

## **TABLE OF CONTENTS (Continued)**

Sustainable, Environmentally Compatible Design Principles	28
Financial Responsibility for Self-Sustaining Operation of Stiltsville	28
Alternative B: National Park Service Development and Management to Provide for Public Use	29
Concept	29
Financial Responsibility for Self-Sustaining Operation of Stiltsville	29
Alternative C: Competitive Leasing to Provide for Public and Private Use	30
Concept	30
User Capacity	30
Protecting the Resources of the Park	31
Protecting the Health and Safety of the Public	31
Sustainable, Environmentally Compatible Design Principles	32
Financial Responsibility for Self-Sustaining Operation of Stiltsville	32
Alternative D: No Action – Removal of the Stiltsville Structures	33
Concept	33
Alternatives Eliminated from Further Study	34
Short-Term Leases	34
Mothballing	34
Boundary Adjustments to Remove Stiltsville from Biscayne National Park	34
Preferred Alternative	36
Environmentally Preferred Alternative	37
Summary of Alternatives	39
Degree to Which Each Alternative Meets the Purpose, Need, and Objectives	39
Important Features of Each Alternative	49
Impacts of Each Alternative	49

### **Affected Environment**

Water Quality	61
Biological Resources	64
Seagrass Beds	64
Aquafauna	69
Avifauna	66
Artificial Habitat Communities	69
Endangered or Threatened Species	70
Ecologically Critical Areas	73
Cultural Resources	75
Historic Resources	75
Archeological Submerged Sites	76
Historic Period	76
Visitor Use and Experience and Visitor Safety	77
Sound Environment/Soundscape	80
Visual Resources	82
Park Operations	83
Socioeconomics	84

## **TABLE OF CONTENTS (Continued)**

### **Environmental Consequences**

General Methodology for Establishing Impact Thresholds and Measuring Effects	87
General Analysis Method	87
Impairment Analysis Method	88
Cumulative Effects Analysis Method	93
Environmental Analysis Organization	93
Water Quality	93
Methodology	94
Regulations and Policies	95
Impacts of Alternative A (Managed by a Non-profit Organization)	95
Impacts of Alternative B (National Park Service Management for Public Use)	98
Impacts of Alternative C (Competitive Leasing for Public Use)	99
Impacts of Alternative D (Removal of Structures)	100
Biological Resources	102
Methodology	102
Regulations and Policies	103
Impacts of Alternative A (Managed by a Non-profit Organization)	104
Impacts of Alternative B (National Park Service Management for Public Use)	107
Impacts of Alternative C (Competitive Leasing for Public Use)	108
Effects of Alternative D (Removal of Structures)	109
Endangered or Threatened Species	111
Methodology	111
Regulations and Policies	111
Impacts of Alternative A (Managed by a Non-profit Organization)	111
Impacts of Alternative B (National Park Service Management for Public Use)	113
Impacts of Alternative C (Competitive Leasing for Public Use)	114
Impacts of Alternative D (Removal of Structures)	114
Ecologically Critical Areas	116
Methodology	116
Regulations and Policies	116
Impacts of Alternative A (Managed by a Non-profit Organization)	117
Impacts of Alternative B (National Park Service Management for Public Use)	118
Impacts of Alternative C (Competitive Leasing for Public Use)	119
Impacts of Alternative D (Removal of Structures)	120
Cultural Resources	122
Methodology	122
Issues	123
Regulations and Policies	123
Impacts of Alternative A (Managed by a Non-profit Organization)	124
Impacts of Alternative B (National Park Service Management for Public Use)	125
Impacts of Alternative C (Competitive Leasing for Public Use)	126
Impacts of Alternative D (Removal of Structures)	126
Visitor Use and Experience and Visitor Safety	128
Methodology	128
Regulations and Policies	128

## **TABLE OF CONTENTS (Continued)**

Impacts of Alternative A (Managed by a Non-profit Organization)	129
Impacts of Alternative B (National Park Service Management for Public Use)	132
Impacts of Alternative C (Competitive Leasing for Public Use)	132
Cumulative Effects	133
Impacts of Alternative D (Removal of Structures)	134
Sound Environment/Soundscape	136
Methodology	136
Regulations and Policies	136
Impacts of Alternative A (Managed by a Non-profit Organization)	138
Impacts of Alternative B (National Park Service Management for Public Use)	139
Impacts of Alternative C (Competitive Leasing for Public Use)	139
Impacts of Alternative D (Removal of Structures)	140
Visual Resources	142
Methodology	142
Regulations and Policies	142
Impacts of Alternative A (Managed by a Non-profit Organization)	143
Impacts of Alternative B (National Park Service Management for Public Use)	144
Impacts of Alternative C (Competitive Leasing for Public Use)	144
Impacts of Alternative D (Removal of Structures)	145
Park Operations	147
Methodology	147
Regulations and Policies	147
Impacts of Alternative A (Managed by a Non-profit Organization)	148
Impacts of Alternative B (National Park Service Management for Public Use)	149
Impacts of Alternative C (Competitive Leasing for Public Use)	150
Impacts of Alternative D (Removal of Structures)	151
Socioeconomics	152
Methodology	152
Regulations and Policies	152
Impacts of Alternative A (Managed by a Non-profit Organization)	152
Impacts of Alternative B (National Park Service Management for Public Use)	154
Impacts of Alternative C (Competitive Leasing for Public Use)	154
Impacts of Alternative D (Removal of Structures)	155
Sustainability and Long-Term Management	157
The Relationship between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	157
Any Irreversible or Irretrievable Commitments of Resources That Would Be Involved Should the Alternative Be Implemented	157
Any Adverse Impacts that Cannot Be Avoided Should the Action Be Implemented	158
Consultation and Coordination	159
History of Public Involvement	159
Agencies/Tribes/Organizations/Individuals Contacted	161
List of Preparers	162
National Park Service	162
Parsons	162
List of Recipients	163
References	167

## **TABLE OF CONTENTS (Continued)**

Bibliography	167
Index of Key Words	172

### **APPENDIXES**

A	Description of the Stiltsville Structures	175
B	Decision Tree Flow Diagram	191
C	Stiltsville Committee Report	192
D	A Proposal for Joint Stewardship of Stiltsville and Miami's Marine Ecosystems	194
E	Species Observed or Recorded in the Stiltsville Region of Biscayne National Park	201
F	Letter from the Keeper of the National Register of Historic Places	204

### **LIST OF FIGURES**

Location	3
Vicinity	7
Seagrass Beds	66

### **LIST OF TABLES**

1: Estimated Use of Individual Structures	under Alternative A	26
2: Estimated Use of Individual Structures	under Alternative C	31
3: Objectives, and the Ability of the Alternatives to Meet Them		40
4: Summary of Important Features of the Alternatives		50
5: Summary of Impacts of the Alternatives		51
6: Endangered, Threatened, and Special Concern Species	Present or Potentially Present in the Vicinity of Stiltsville	71
7: Annual Boat Launch Estimates		78
8: Typical Staffing of Biscayne National Park		83
9: Biscayne National Park General Management Plan Amendment Impact Threshold Definitions		89
10: Anticipated Effects to Common Visitor Activities	in the Vicinity of Stiltsville	130









## **PURPOSE AND NEED FOR THE PLAN**

*This section defines the purpose of the general management plan amendment for the Stiltsville area of Biscayne National Park, and why the general management plan amendment is needed. It includes planning direction and guidance, and identifies the issues (decision points) and impact topics that were considered.*

### **PURPOSE OF THE GENERAL MANAGEMENT PLAN AMENDMENT**

The purpose of this general management plan amendment and associated environmental impact statement is to evaluate specific actions for the management of the Stiltsville area of Biscayne National Park. This plan amendment addresses the appropriate future development needs, uses, management, and maintenance of seven structures known as Stiltsville. These seven structures are located in Biscayne Bay, supported by pilings over the water, and are currently under special use permit to private individuals for day and overnight (exclusive) recreational uses. The location of Stiltsville within Biscayne National Park is shown on the Location map on page 3.

Facilities and activities within the park must be managed and regulated to preserve resources and values in accordance with the Organic Act of 1916, as amended, the park's enabling legislation, and other legal mandates. Management of park facilities also should conform to the *Biscayne National Park General Management Plan, Development Concept Plan, Wilderness Study, and Environmental Assessment* (National Park Service 1983).

### **NEED FOR THE GENERAL MANAGEMENT PLAN AMENDMENT**

In 1968, the President created Biscayne National Monument in southeast Florida. In 1980, Congress expanded the monument's boundaries and redesignated the area as Biscayne National Park. The submerged lands owned by the state of Florida within the expansion area were transferred by the state of Florida to the federal government in 1985.

There were 14 stilt structures, collectively known as "Stiltsville," within the expansion area. They were occupied under individual leases with the state of Florida, signed in 1976 with an expiration date of July 1, 1999.

Currently, seven structures remain. The others were more than 50 percent damaged or destroyed by the wind and surf during Hurricane Andrew in 1992.

The former leases designated the seven structures as "campsites," reflecting the rustic experience associated with current use. These structures are not connected to municipal water, sewer, or electrical service, and provide few other amenities (Canzanelli 2001).

The general management plan currently used to administer Biscayne National Park (National Park Service 1983) pointed out that the leases between the state of Florida and the leaseholders for the Stiltsville structures were nonrenewable. The general management plan stated, "when they [the leases] expire in 1999 all man-made structures will be removed" (National Park Service

## PURPOSE AND NEED FOR THE PLAN

1983). This language mirrors the language in the leases that required the leaseholders to remove, at their own expense, the structures when the leases expired.

However, based on the high level of public interest associated with the future of Stiltsville, the federal government and the former leaseholders entered into a series of standstill and settlement agreements and special use permits after the leases expired. These agreements maintained the status quo, giving interested parties time to develop a plan to reevaluate the future use of these structures. The last of the standstill agreements ended on March 31, 2001. It was followed by settlement agreements and then a Special Use Permit that provides right of occupancy to the former leaseholders until December 31, 2002.

The natural resources and ecological processes of Biscayne Bay cannot be adequately appreciated by looking across the water's surface from the shore. However, it is expensive for groups such as school classes to rent a boat for half-day or full-day education and interpretive opportunities and for low-income local residents to own a boat. Therefore, a large segment of the population in the nearby Miami metropolitan area, especially people with limited disposable income, has little opportunity to become familiar with the resources of the bay and the importance and value this ecosystem has to everyday life.

In recent years the use of the Stiltsville structures has been limited exclusively to the former leaseholders and their guests. The former leaseholders have, however, frequently made the structures available to community organizations, service clubs, and youth groups for short-term use. Because these structures present a unique opportunity for introducing the bay ecosystem to visitors who otherwise would have little opportunity to spend time on the water, the National Park Service would like to increase access by the general public, education organizations, and community groups.

Under the proposed action, one or more organizations or individuals may create a non-profit organization under the regulations of the Internal Revenue Service and non-competitively enter into an appropriate arrangement with the National Park Service for the management and use of the Stiltsville structures. The organization would develop, manage, and maintain the seven existing Stiltsville structures to retain their unique character and to provide broad public access and diversity of use consistent with National Park Service policy and best management practices for environmental protection. The proposed action would include a mix of uses that might include:

Public functions and services including non-profit organization functions, public and private education programs, scientific research activities, an artist-in-residence program, professional meetings and retreats, and rustic campsites.

National Park Service functions, including interpretation, resource management, and ranger activities.

The Stiltsville organization would seek donated funds or grants from a wide variety of sources and organizations or funds from entities participating with the organization to repair, rehabilitate and operate the buildings at Stiltsville to support the intended uses.

LOCATION





The support for the idea of using the structures for public education, interpretation, and enjoyment has led the National Park Service to enter into a multi-stage planning process to identify and recommend future public uses consistent with National Park Service policy. This process started in January 2001 with the creation of the Stiltsville Committee of the National Park System Advisory Board. The development of this *General Management Plan Amendment and Draft Environmental Impact Statement* marks the next phase of this effort.

This general management plan amendment is needed, as identified by the National Park Service and through public comment, to:

- Codify the change in the National Park Service position on Stiltsville from “removal” to managing the structures for public use and enjoyment.

- Define the strategies that will allow for diverse public use of Stiltsville.

- Protect the resources of the park, especially those immediately around the structures and within the Safety Valve area.

- Protect the health and safety of the public using the structures.

- Determine the sustainable, environmentally compatible design principles that should be applied to any renovation of facilities at Stiltsville.

- Establish a framework that could allow the structures to become financially self-supporting.

In conformance with the National Environmental Policy Act (NEPA), this draft plan also presents and evaluates an alternative that would implement current management direction as set forth in the 1983 *Biscayne National Park General Management Plan* (the NEPA No Action Alternative). Under this alternative, the National Park Service would enforce the general management plan terms requiring removal of the structures upon expiration of the current special use permits.

Specific issues that the plan addresses include, but are not limited to, the following:

*Resource impacts:* Some visitors who operate boats around the structures or in the extremely shallow water of the Safety Valve may lack the skill, knowledge, or care to avoid sensitive marine resources such as seagrasses. Proper education, guidance, and management controls would help minimize undesirable impacts, such as sediment movement that could adversely affect aquatic organisms by reducing light penetration or through redeposition on the bay bottom.

*Ongoing maintenance needs:* As described in Appendix A, several structures have deteriorating features such as crumbling pilings or rotting decking. Substantial improvements and regular maintenance may be required to bring the structures to an appropriate condition for use.

*Removal of structures:* Because of the harsh marine setting of Stiltsville, the buildings eventually will sustain sufficient damage from hurricanes, storms, fires, or other events that they should be removed. Predetermined criteria would be used to determine whether a damaged structure should be removed or repaired (see Appendix B). This process would be followed upon the passing of any major storm or other significant event as

## PURPOSE AND NEED FOR THE PLAN

stipulated. Should there be any resulting damage to any of the Stiltsville structures, this process would supercede any management alternative selected for the site. When the decision process results in repairing a structure, design guidelines would direct the repairs to ensure compatibility with the existing character of Stiltsville. Design guidelines would be developed subsequent to the approval of this general management plan amendment.

*Public safety:* Concerns include structural integrity and the buildings' load bearing capacity when used by large numbers of people at one time. The deteriorated conditions described above, such as warped decking or inadequate guardrails, can imperil users.

*Spill potential:* Human wastes are produced during use, and hazardous materials such as petroleum fuels are stored and used on the structures. Without proper handling, storage, and/or disposal of these substances in and around the structures, damage could occur to sensitive marine resources.

This general management plan amendment is needed to address these issues and to provide the framework that will guide rehabilitation, stabilization, and use of the structures and facilities in a manner that will protect the surrounding environment.

## GEOGRAPHIC AREA COVERED BY THE PLAN

The area considered in this general management plan amendment is shown on the Vicinity map. It consists of the northern portion of the Safety Valve shoals within the boundary of Biscayne National Park and includes:

The seven stilt structures in the northern portion of Biscayne National Park; and

The bay extending approximately ¼ mile beyond any of the stilt structures.

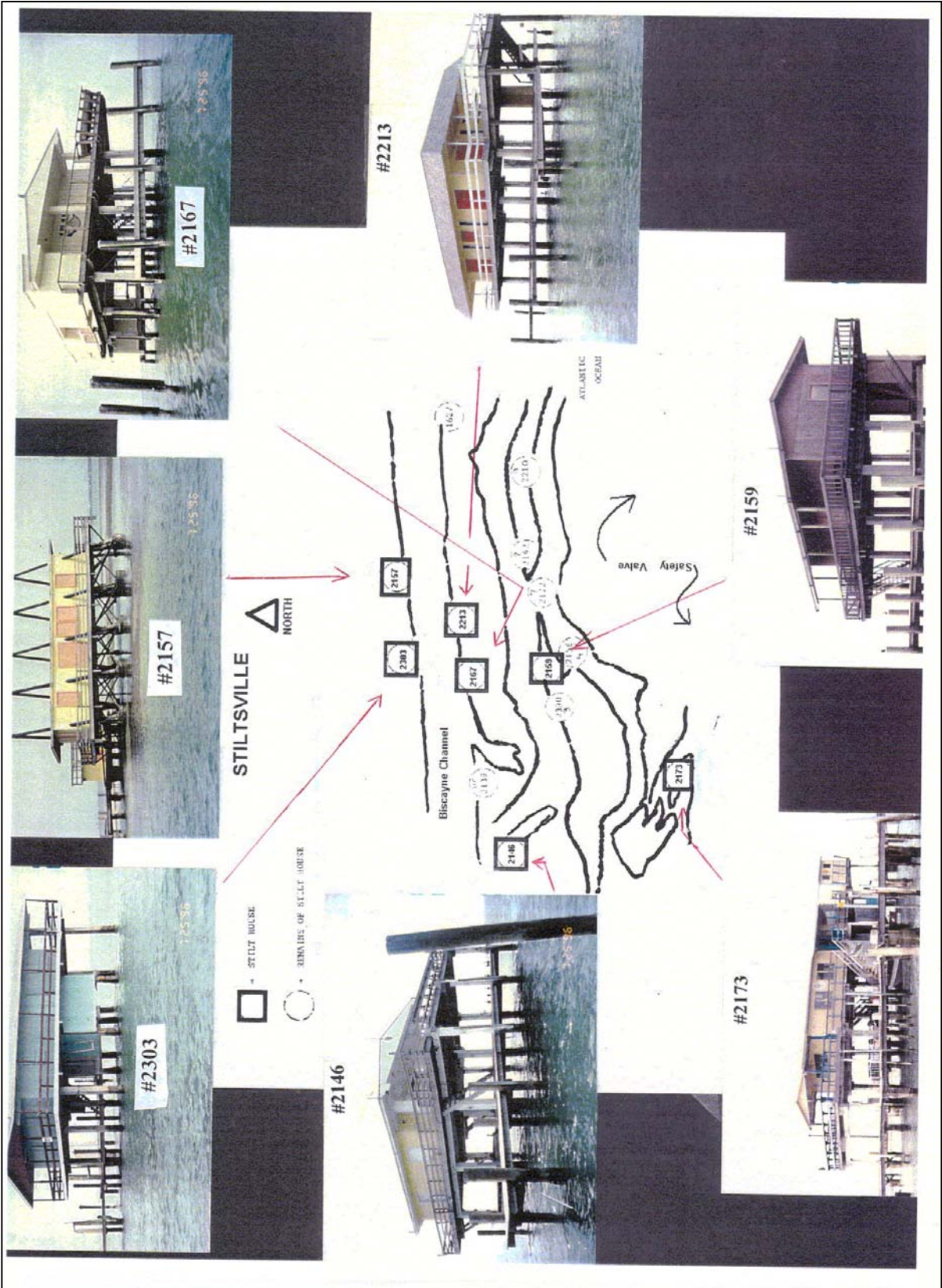
For most resources, the geographic area covered by the environmental impact statement is the same as the area covered by the general management plan amendment. However, for some resources such as visitor use and experience, effects to the entire Miami metropolitan area are considered.

## PARK PURPOSE, MISSION, AND SIGNIFICANCE

The general management plan amendment for the Stiltsville area must conform with the purpose, mission, and significance of Biscayne National Park. Such statements, which were not included in the park's current general management plan prepared in 1983, are currently being revised in association with a full update to the park's general management plan. The draft statements are presented here to provide the framework within which Stiltsville must be managed.

Biscayne National Park was established in 1968 as Biscayne National Monument. The boundaries were expanded in 1974 "to add approximately 8,738 acres of land and water, including all of Swan Key and Gold Key." In 1980 the area was expanded by Congress to its current size and designated Biscayne National Park.

VICINITY







According to Public Law 90-606, the purpose of Biscayne National Park is “preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty.” This same statement is proposed as the park purpose statement in the updated general management plan.

A draft mission statement for the park also has been prepared in association with the general management plan update. The three missions of the park are defined as follows.

Conserves the rare combination of Florida coral reefs and keys, estuarine bay, mangrove coast, the wildlife, associated habitats, and the historic elements contained within them.

Exemplifies responsible stewardship and fosters responsibility and stewardship within others.

Enables visitors to experience tranquility, scenic vistas, compatible recreation, and the underwater environment.

In fulfilling its mission:

Natural and cultural resources and associated values are protected, restored, maintained, and adaptively managed within their broader south Florida and Caribbean ecosystems and cultural context, based on sound science.

The park contributes to knowledge about natural and cultural resources and their associated values.

Visitors are satisfied with their opportunities to safely experience activities appropriate with park resources and purpose. Management decisions about visitor use are based on sound science.

Visitors and neighboring communities are aware of Biscayne National Park’s uniqueness within the context of the south Florida ecosystem. They understand the park’s importance and support preservation of park resources.

Significance statements also have been developed as part of the general management planning process. Biscayne National Park is significant in that:

The park’s fabric of Florida coral reefs and keys, estuarine bay and mangrove coast is an integral part of the south Florida ecosystem and the wider Caribbean community providing a place where diverse, temperate and tropical species mingle.

Consistent with the park purpose and values, and the National Park Service Organic Act, visitors enjoy opportunities for a multitude of recreational activities in proximity to one of the country’s major metropolitan centers.

Visitors find inspiration in Biscayne’s tranquility, solitude, scenic vistas, underwater environment, and the sounds of nature’s voices.

The park encompasses the northernmost extent of fragile and dynamic Florida coral reefs and coastal systems and is characterized by transitions in the physical and biological environment.

## PURPOSE AND NEED FOR THE PLAN

The park preserves a largely undisturbed gene pool of tropical and subtropical flora.

The park provides a rare opportunity to experience largely undeveloped Florida Keys surrounded by clear tropical waters and fresh sea breezes.

The park preserves unique marine habitats and nursery environments that are capable of sustaining diverse and abundant native fisheries.

The cultural history found in the park is inextricably linked to the natural environment. The submerged and terrestrial resources represent a continuum of rich history and a melding of diverse cultures from prehistoric times to today.

The park offers outstanding opportunities for education and scientific research due to the diversity, complexity and interrelatedness of the natural and cultural resources and provides a dynamic laboratory for study and learning. According to Public Law 90-606, the purpose of Biscayne National Park is "to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations

## BACKGROUND

Biscayne National Park encompasses a large portion of Biscayne Bay and the offshore waters to the south of Miami in Miami-Dade County, Florida. The park's established boundary includes approximately 174,000 acres.

Nearly 165,000 acres are marine waters, containing about 72,000 acres of coral reefs.

About 9,100 acres are dry land, of which 4,250 acres are divided into 42 islands or keys.

Resources protected within the park include a unique combination of estuarine and marine environments. There are currently 16 federally listed threatened and endangered wildlife species occurring within Biscayne National Park. Additionally, there are 2 state-listed threatened and endangered wildlife species, 31 state-listed threatened and endangered vascular plants, and 8 state-listed wildlife species of special concern occurring within the park.

Biscayne Bay, including the Safety Valve area where Stiltsville is located, is designated by the state legislature as an Outstanding Florida Water. The park preserves a unique, sensitive, marine environment that is an important component of the south Florida ecosystem and the economy of south Florida.

Resource-based recreation is an important part of Biscayne National Park's mission. The park was used by more than 442,000 visitors in 1999 (<http://www.nps.gov/bisc>). Boating is the most visible activity within the park. Other recreational activities include snorkeling, diving, fishing, camping, picnicking, and hiking on nature trails. The park provides excellent opportunities for the public to learn about marine ecosystems and the fragile, threatened nature of Biscayne Bay.

Stiltsville has a colorful history that dates back to the 1930s, when "Crawfish Eddie" Walker built the first shack on stilts above the water. Over the years, more buildings were constructed, and the area took on an aura of mystery. While highly visible from the mainland, Stiltsville structures were accessible only by water, and admission to some of the structures was by invitation only.

This contributed to the area's reputation as the place to see and be seen when visiting the winter resorts on nearby Miami Beach. Stories of illegal alcohol and gambling led to several police raids on two of the structures known as the Bikini Club and Quarterdeck Club.

At its peak in 1960, there were 27 structures on the flats. However, hurricanes, fires, and the exposed setting made every building relatively short-lived. When the state of Florida entered into leases in 1976 for the lands on which the structures were built, only 14 structures remained.

In 1985 the state of Florida deeded the submerged land on which the stilt structures are built to the federal government as part of Biscayne National Park. The National Park Service honored the leases. The leases expired in 1999.

Below is a brief Stiltsville chronology.

Prior to 1937	"Crawfish Eddie" Walker builds the first structure in Stiltsville.
1937	Three friends of Crawfish Eddie, the fishermen Grady, Lee, and Edwards, build the second shack in Stiltsville.
1940	Stiltsville's first private club, the Quarterdeck Club, opens in November.
Post 1940	The second club, the Swan, is built. It later changes its name to the Probus.
1945	There are 12 private structures and 2 clubs in Stiltsville.
1949	Quarterdeck Club is raided, but no evidence of gambling is found.
1950	Warren Freeman, a noted hotelman, purchases the Quarterdeck Club and attempts to legitimize the business into a high-class operation. The structure sustains major damage in a hurricane that same year, and Freeman sells the club.  The original Stiltsville structure built by Crawfish Eddie is lost in a hurricane.  (The National Hurricane Center did not start naming hurricanes until 1953.)
1950s	Proposals to develop the upper keys and to build a causeway from Key Biscayne to Soldier Key, Ragged Keys, Sands Key, and Elliott Key lead to public concern about undeveloped keys, eventually resulting in establishment of Biscayne National Monument.  As Key Biscayne grows, the residents complain that Stiltsville represents an eyesore. They refer to the Stiltsville residents as squatters and complain that they do not pay taxes.
1960	Stiltsville reaches its greatest size, 27 buildings.  After Hurricane Donna, seven structures are left.
1961	Quarterdeck Club burns down on November 6.

## PURPOSE AND NEED FOR THE PLAN

Early 1960s	State of Florida considers moving the Stiltsville residents out.
1968	Biscayne National Monument is established on October 18.
1960 to 1974	Additional structures are built, so that in 1974 Stiltsville includes 14 structures.
1976	State of Florida establishes leases with individual leaseholders, which expire on July 1, 1999.  Biscayne National Monument is expanded by 8,738 acres of land and water on October 26.
1978	General management plan for Biscayne National Park is issued.
1980	The unit is redesignated as Biscayne National Park and its northern boundary expands to include the Stiltsville area on June 28.
1983	Updated general management plan for Biscayne National Park, following the language in the leases, states that all Stiltsville structures will be removed when the leases expire in 1999.
1985	State of Florida transfers submerged state-owned lands within the expansion area, including those in the Stiltsville area, to the federal government.
1992	Hurricane Andrew damages all but seven of the structures to the extent that they are removed.
1999	The first in a series of standstill agreements is established. The final agreement expires March 31, 2001.
2001	Settlement agreement establishes right of occupancy to the leaseholders until March 31, 2002.  Updating of the general management plan, which will direct management of Biscayne National Park for the next 15 to 20 years, begins. Provisions of the final general management plan amendment for Stiltsville will be incorporated into the new general management plan.
2002	Special use permits allow former leaseholders to use the structures while the general management plan amendment is completed.

## IMPACT TOPICS

Impact topics focus the planning process and the assessment of potential consequences of the alternatives. *Director's Order #12 and Handbook* (National Park Service 2001a) lists impact topics that must be considered, based on requirements in such sources as federal legislation, executive orders, and the Council on Environmental Quality guidelines for implementing the National Environmental Policy Act (CEQ 1978). Other impact topics are identified based on regional or park-specific concerns, or as a result of scoping.

For impact topics that were retained, the public involvement process identified activities or conditions at Stiltsville that were of concern. These issues are briefly summarized below. More detailed information is provided under “Methodology” for each impact topic in the “Environmental Consequences” section. The issues served as the basis for the impact analysis.

During public participation, stakeholders identified numerous goals for protecting the environment and enhancing social or economic conditions. These goals were consolidated into 16 objectives that the general management plan amendment should meet. The objectives of the plan with regard to each of the impact topics are identified below. The ability of each of the alternatives to meet each of the objectives was analyzed as part of the alternatives evaluation process.

### **Water Quality**

Protection of water quality is mandated both by legislation and executive order. Water quality is of particular importance at Stiltsville because Biscayne National Park is designated by the state legislature as an Outstanding Florida Water. Water quality issues were associated with sediment disturbances, the introduction of contaminants such as sewage and toxic chemicals, and changes in public attitudes and behavior regarding water quality resulting from education received at Stiltsville.

Two water quality objectives were identified for the general management plan amendment:

Water pollutants associated with the use of the structures and watercraft emissions are managed to comply with state and Clean Water Act antidegradation policies, goals, and regulations.

Aquatic organisms, including seagrasses, receive protection from activities associated with the use of the structures, including sediment disturbances, to ensure the viability of Biscayne Bay ecosystems.

### **Biological Resources**

Issues identified for biological resources include both direct effects and indirect effects from activities at Stiltsville:

Direct effect issues include such concerns as adverse impacts to seagrass beds from boats that run aground while accessing Stiltsville and deleterious effects on animals from trash from the structures.

Indirect effect issues include effects on birds and aquatic life from changes in water quality and the effects of increased public awareness about the biological resources of the bay.

The public participation process identified three objectives for biological resources that should be met by the general management plan amendment:

## PURPOSE AND NEED FOR THE PLAN

Activities associated with the use of the structures occur in a manner that minimizes unwanted effects on aquatic resources and protects birds, fisheries, other wildlife, and organisms, including endangered or threatened species, and their habitats.

The close proximity of the structures to the resource is used to educate the public and enhance their understanding of the fragility of the Biscayne Bay marine environment.

Biota are protected from adverse effects from contaminants that could be released from the structures.

### **Endangered or Threatened Species**

Most of the issues relating to endangered or threatened species mirror the issues identified for all biological resources. In addition, concerns were expressed about deleterious effects on endangered or threatened species from collisions with boats, and loss of habitat, particularly seagrass beds.

The general management plan amendment should meet the following objective for endangered or threatened species:

Endangered or threatened species are protected from harmful interactions and human-caused effects associated with Stiltsville visitors and watercraft.

### **Ecologically Critical Areas**

Designated essential fish habitat and habitat of particular concern are resource attributes that cumulatively are considered to be ecologically critical areas within the Stiltsville footprint. Most of the issues relating to ecologically critical areas focus on the effects of activities at Stiltsville on water quality and on seagrass beds. Direct effect issues included such concerns as effects on seagrass beds from boats that run aground while accessing Stiltsville, and impacts from trash and hazardous materials that originate from the structures or from construction activity.

The general management plan amendment should meet the following objective for ecologically critical areas:

Essential fish habitat is protected from activities associated with use and renovation of the Stiltsville structures and access by watercraft.

### **Cultural Resources**

Cultural resources issues include the potential for undesirable effects on submerged cultural resources from vandalism, construction activities, or inadvertent exposure of the resources by increased erosion. Issues also include opportunities for improved education of the public about the area's historical and prehistorical resources.

The general management plan amendment should meet the following objective for cultural resources:

Submerged cultural resources are protected. Any renovation, demolition, or construction in the Stiltsville vicinity complies with Section 106 of the National Historic Preservation Act.

### **Visitor Experience and Visitor Safety**

A key visitor experience issue focuses on opportunities to provide private, social experiences versus public experiences such as education and interpretation. The use issue evaluates total visitor days and how many people would be included in each user group. Another issue involves providing experiences in the bay environment to members of groups with limited access to this type of setting, including people with physical, mental, or economic limitations.

Safety issues include the structural soundness of the facilities, the potential for overloading the structures, and the presence of safety features such as railings. The safe transport of visitors to and from the site also is of concern.

The public participation process identified two objectives for visitor experience and visitor safety that should be met by the general management plan amendment:

A high-quality, safe, educational, balanced, diverse, and accessible (general access and disabled access) public visitor experience is provided at Stiltsville.

Information is effectively conveyed to the public about the area's history as well as its natural and cultural resources, including those in the immediate Stiltsville vicinity and at nearby locations, such as Soldier Key and Key Biscayne.

### **Sound Environment/Soundscape**

The primary issue with regard to the sound environment is the compatibility of noise generated at the Stiltsville structures with the character of a national park. Other issues include generation of construction noise from renovation of the Stiltsville structures and the opportunity to provide an educational experience about noise and the natural soundscape.

Two objectives regarding sound and the noise environment were identified for the general management plan amendment:

Human-caused intrusions on the natural soundscape are minimized.

The structures' location close to the environment is used to teach the public about the importance of preserving the natural soundscape.

### **Visual Resources**

A key visual issue is the number of people who have the opportunity to enjoy the visual resources from Stiltsville. These issues included the presence of Stiltsville within the natural viewshed for land-based viewers.

Two objectives for visual resources were identified for the general management plan amendment:

## PURPOSE AND NEED FOR THE PLAN

The unique visual character of Stiltsville is maintained.

The natural seascape viewshed is restored when the structures can no longer be sustained without rebuilding under the guidelines established in this plan (see the Criteria Used to Determine whether a Damaged Structure Should Be Removed or Repaired figure).

### **Park Operations**

An important issue for Biscayne National Park is the need for a base for park operations and visitor services in the northern portion of the park. These could include enforcement, visitor services, education, research, and resource management. An associated issue involves additional staff requirements to provide these services.

Rehabilitating, maintaining, and operating the Stiltsville structures would incur costs. Issues were raised about the costs of the alternatives and opportunities to obtain funding from alternate sources.

Two park operations objectives were identified for the general management plan amendment:

Providing a base for park operations in the northern portion of the park.

Improving the integrity of the structures and providing regular preventative maintenance to minimize the need for cleanup following major storms.

### **Socioeconomics**

Public involvement raised questions about effects on tourism, retail operations, and commercial operations, including the costs related to construction on the structures.

The general management plan amendment should meet one socioeconomic objective:

The park works cooperatively with concessioners, local businesses, and organizations to provide services and visitor opportunities.

## **ISSUES ELIMINATED FROM FURTHER DISCUSSION**

*Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (National Park Service 2001a) lists 13 impact topics that must be considered in an environmental impact statement. If they are judged to be not applicable to the federal action being evaluated, they should be included in the discussion of issues and impact topics to be dismissed from detailed evaluation by the analysis.

The impact topics identified below have been dismissed from further consideration because the range of alternatives would have no effect on these resources or because the impacts have been evaluated within another topic. Some of the impact topics were dismissed because they clearly are not applicable. For example, prime and unique farmlands do not occur at Stiltsville, which is in a marine environment.



**Air Quality:** Scoping did not identify air quality as an impact topic of concern. In addition, when air emissions associated with activities at Stiltsville (primarily emissions from boat engines and generators used on the structures) are compared to air emissions from boats in the Biscayne Channel or to air emissions from all sources in the Miami area, neither of the alternatives would result in a substantial volume of emissions. Also, winds in the vicinity typically disperse emissions in the Stiltsville area very quickly.

**Prime and Unique Agricultural Lands:** Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique agricultural land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Both categories require that the land is available for farming uses. Lands within Biscayne National Park are not available for farming and, therefore, do not meet the definitions.

**Soils:** Erosion, which leads to loss of soil fertility and the soil resource in land-based systems, is not applicable to the marine setting beneath Stiltsville. Protection of the bay bottom as the substrate that supports vegetation, particularly seagrasses, is included with biological resources.

**Wetlands and Floodplains:** The project area is composed of a submerged marine environment which is dominated by seagrass beds. It does not meet the U. S. Army Corps of Engineers definition of a wetland, but is classified as a special aquatic site that is afforded protection under the Clean Water Act. The effects of alternative actions on seagrass beds are considered in the “Biological Resources” section. The area does not meet the Executive Order 11988 criteria for protection of floodplains.

**Wilderness:** According to *Management Policies* (National Park Service 2001b), proposals having the potential to impact wilderness resources must be evaluated in accordance with National Park Service procedures for implementing the National Environmental Policy Act. Because the Biscayne National Park does not have any designated wilderness areas, this impact topic is dismissed.

**Conflicts with Land Use Plans, Policies, or Controls:** The project area is entirely within the boundaries of Biscayne National Park and does not include any non-National Park Service lands. Therefore, there are no conflicts with any other land use plans, policies, or controls. However, other land use plans, policies, and controls were considered in the cumulative effects evaluation for each impact topic (see “Cumulative Actions” in this chapter). In addition, conflicts with land use plans, policies, and controls will be considered in the NEPA document prepared to support the design and construction to refurbish the Stiltsville structures when the provisions of this general management plan amendment are implemented.

**Energy Requirements and Conservation Potential:** Scoping did not identify energy requirements and conservation potential as an impact topic of concern. In addition, when compared to energy requirements for boats in Biscayne Bay or to energy use throughout the Miami area, energy used for boat engines or for generators on the structures is negligible. Regardless, the proposed action includes several provisions for energy conservation and environmentally friendly construction.

**Environmental Justice:** Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires that all federal agencies

## PURPOSE AND NEED FOR THE PLAN

address the effects of policies on minorities and low-income populations and communities. None of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations as defined in the Environmental Protection Agency's *Draft Environmental Justice Guidance* (July 1996).

**Indian Trust Resources:** Indian trust assets are assets that the United States holds and administers for Indian tribes. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. Indian trust resources would not be affected by management or use in the Stiltsville area. Therefore, this impact topic was eliminated from further consideration.

**Natural or Depletable Resource Requirements and Conservation Potential:** This category was not identified as an impact topic of concern by scoping. Nonetheless, it is covered under the impact topic "Sustainability and Long-Term Management" in the consideration of irreversible or irretrievable commitments of resources that would be involved should the alternative be implemented.

## CONNECTED, CUMULATIVE, AND SIMILAR ACTIONS

### Cooperating Agencies

This draft general management plan amendment and environmental impact statement does not have any cooperating agency involvement, as defined in the Council on Environmental Quality's (CEQ 1978) "Regulations for Implementing Procedural Provisions of the National Environmental Policy Act." However, numerous agencies were consulted in the preparation of this document, as described in the "Consultation and Coordination" section.

### Connected and Similar Actions

Connected and similar actions for this draft general management plan amendment refer to other planning projects in the vicinity. They include other National Park Service planning efforts and planning currently in force or underway by entities other than the National Park Service. Connected and similar actions include, but are not limited to:

Current preparation of an updated general management plan for Biscayne National Park. The general management plan will provide the overall management framework for the park, and this general management plan amendment will be integrated as a planning component.

The Biscayne National Park Soundscape Management Plan.

The Biscayne National Park Fisheries Management Plan.

The National Oceanic and Atmospheric Administration Fishery Management Plan Amendments.

The Surface Water Improvement and Management Plan for Biscayne Bay and the proposed wetland restoration and stormwater retrofit projects.

*Biscayne Bay Aquatic Preserve Management Plan (Draft)* (Metro-Dade County Planning Department 1986).

*Biscayne Bay Card Sound Aquatic Preserve Management Plan* (Florida Department of Natural Resources 1991).

The Comprehensive Everglades Restoration Plan and other directions set by the south Florida Ecosystem Restoration Task Force.

Everglades Surface Water Improvement and Management Plan and proposed wetland restoration projects.

The Florida Keys National Marine Sanctuary Management Plan.

The South Atlantic Fishery Management Council's (1998) Final Habitat Plan for the South Atlantic Region, which defines essential fish habitat requirements for fishery management plans.

*Draft Florida Manatee Recovery Plan* (U.S. Fish and Wildlife Service 1993).

*Biscayne Bay Partnership Initiative Final Report* (2002), which includes *A Bright, Great Bay* (policy report) as well as reports from the Social and Economic, Science, Management, and Regulations Survey Teams.

A good discussion of many of the plans in the Biscayne Bay region that generally affect the Stiltsville area is provided in *An Update of the Surface Water Improvement and Management Plan for Biscayne Bay* (Mulliken and VanArman 1995). The updated general management plan for Biscayne National Park, which currently is in preparation, will include information on how these plans specifically affect Biscayne National Park, including the Stiltsville area.

### **Cumulative Actions**

Cumulative actions are actions by the National Park Service or others that may have additive impacts on one or more of the resources of Biscayne National Park and the Stiltsville project area. The assessment of cumulative effects includes past, current, and reasonably foreseeable future projects. The actions described below were included in the cumulative impact analyses in the "Environmental Analysis" section of this general management plan amendment and environmental impact statement.

*Past and Future Urbanization of the Miami-Dade County Area:* Biscayne National Park and Biscayne Bay are often referred to as "Miami's backyard." The metropolitan area wraps around the west and north parts of the park, resulting in a large protected natural area adjacent to one of the fastest growing urban areas in the country. Changes that were considered to determine the effects of park management within the larger regional setting included, but were not limited to:

## PURPOSE AND NEED FOR THE PLAN

Past conversion of land from the predominant Everglades ecosystem to agricultural use and continuing development of these lands into subdivisions.

Diversion of surface water into canals that drain into the bay.

Increases in recreational boat licenses of more than 400 percent in the past 10 years (Ault *et al.* 2001), with similar increases in recreational boat use throughout the park and in the Biscayne Channel.

Continuing urbanization of the metro area will affect the resources of Biscayne National Park, regardless of management actions taken by the National Park Service within the park. Growth in the urban population and the number of urban residents recreating in and around the park will be particularly important.

*South Florida Ecosystem Restoration:* The interrelationship of and balance between the natural and built environment in south Florida has been the subject of much planning and manipulation throughout the 20th century. In particular, less than 50 percent of the original wetlands of the Everglades remain after channelization for agriculture and urban development.

Historic changes in water flows have adversely affected the natural systems upon which much of the south Florida region depends. Therefore, a program under the coordination of the south Florida Ecosystem Restoration Task Force is being implemented to restore water flows by restoring the natural hydrology. The Comprehensive Everglades Restoration Plan (CERP) passed by Congress in 2000 includes this program. The CERP involves 63 major water resource delivery projects, including seven that will affect or influence Biscayne National Park.

This program includes more than 30 federal, state, and tribal organizations; 16 counties; and 100 cities. The National Park Service and its four south Florida units, including Biscayne National Park, participate in the south Florida ecosystem restoration initiative.

*Surface Water Improvement and Management:* In 1987 the Florida Legislature passed the Surface Water Improvement and Management Act (Chapter 373.451-373.459, F. S.). This act identified priority water bodies, including Biscayne Bay, within the state that would benefit from study and planning efforts, and provided financial backing for the implementation of water quality and ecosystem improvement projects.

The original plan was published in 1988. The critical issues identified in the plan were the preservation and improvement of water quality, water quantity, and environmental resources. The first plan implemented data collection programs and identified and supported the construction of several critical water quality improvement projects.

A revised Surface Water Improvement and Management Plan was published in 1995 (Mulliken and VanArman 1995). Data in the new plan indicate that while projects implemented in support of the first plan are already exhibiting detectable improvements in water quality, targeted goals are still not met. The revised plan report identified 29 water quality projects, 10 new water quantity projects, and 9 new environmental protection projects. Twenty-three of these projects were designated as priority projects and may either be already under construction or completed. All of the proposed projects will have an effect on the dynamics of Biscayne Bay, either directly or indirectly.

## **ALTERNATIVES**

### **FORMULATION OF THE ALTERNATIVES**

The general management plan that currently is used to administer Biscayne National Park (National Park Service 1983) points out that the leases between the state of Florida and the leaseholders for the Stiltsville structures were nonrenewable. That general management plan states, “when they [the leases] expire in 1999 all man-made structures will be removed.”

More recently the National Park Service determined that there was broad public interest in the fate of the structures, including expressions of support for their public use. Therefore, the National Park Service implemented a multi-stage planning process to identify and recommend future public uses consistent with National Park Service policy.

A key element of the planning process involved obtaining input from interested organizations and individuals. The “Consultation and Coordination” section describes the public involvement process for the general management plan amendment.

The National Park System Advisory Board advised the National Park Service that the Stiltsville Advisory Committee be created, which the “Consultation and Coordination” section also describes. This ad hoc organization was formed to help guide the initial steps in the planning process, and to identify and recommend appropriate future public uses of Stiltsville.

Input from the Stiltsville Advisory Committee, public scoping, leaseholders, regulatory agencies, and other stakeholders was used to develop the objectives that should be addressed by the general management plan amendment. These 16 objectives were presented previously in the “Impact Topics” section.

### **FORMULATION OF THE PROPOSED ACTION**

The proposed action presented in this general management plan amendment evolved from a process that included input from the Stiltsville Advisory Committee and all stakeholders identified in the “Consultation and Coordination” section.

The development of the proposed action culminated on May 29, 2002 when the National Park System Advisory Board adopted the recommendations of the Committee. A copy of the committee recommendation, which forms the foundation for the description of the proposed action, is provided in Appendix C.

### **FORMULATION OF THE NO ACTION ALTERNATIVE**

To meet the requirements of the National Environmental Policy Act and the Council on Environmental Quality guidelines for implementing the Act (CEQ 1978), this general management plan amendment and environmental impact statement includes the alternative of no action. For Stiltsville, this alternative would involve continuing current management policy as prescribed by the 1983 general management plan that states “when they [the leases] expire in

## ALTERNATIVES

1999 all man-made structures will be removed.” The no action alternative therefore addresses the action of removing the structures and the long-term conditions that will result following removal.

### **CONSIDERATION OF OTHER ALTERNATIVES**

Several other alternatives were proposed during the alternatives development process. Brief descriptions of each of these, and the reasons they were not retained for detailed evaluations, follow the detailed descriptions of the proposed action and the no action alternative.

### **MITIGATION**

Mitigation is a key concept in planning because it accommodates visitor and park operations interactions with natural and cultural resources and their tolerances for disturbances. Mitigation and best management practices are regularly used to ensure that Biscayne National Park’s natural and cultural resources are protected and preserved for future visitors.

In the legislation that created the National Park Service, Congress charged it with managing lands under its stewardship “in such manner and by such means as will leave them unimpaired for the enjoyment of future generations”(National Park Service Organic Act, 16 USC 1). As a result, the National Park Service routinely evaluates and implements mitigation whenever conditions occur that could adversely affect the sustainability of park resources. The proposed action considers mitigation, such as requiring training for boat operators accessing the structures or the implementation of best management practices during construction and renovation, throughout its analyses.

## **ALTERNATIVE A: PROPOSED ACTION – NON-PROFIT (IRS 501 (C) (3)) ORGANIZATION DEVELOPMENT AND MANAGEMENT TO PROVIDE FOR PUBLIC USE**

### **CONCEPT**

Under Alternative A, one or more organizations or individuals may create a non-profit organization under the regulations of the Internal Revenue Service and non-competitively enter into an appropriate arrangement with the National Park Service for the management and use of the Stiltsville structures. The Stiltsville organization would develop, manage, and maintain some or all of the seven existing Stiltsville structures to provide broad public access and diversity of use consistent with National Park Service policy and best management practices for environmental protection. The National Park Service would maintain and manage any structures needed to carry out National Park Service functions. Alternative A would include a mix of uses that may include:

Public functions and services including non-profit organization functions, public and private education programs, scientific research activities, an artist-in-residence program, professional meetings and retreats, and rustic campsites.

National Park Service functions, including interpretation, resource management, and ranger activities.

Public functions may be provided by other entities through agreements with the non-profit organization. The organization would seek donated funds and grants from a variety of sources, or funds from participating entities to repair, rehabilitate, and operate the buildings at Stiltsville to support the intended uses. They may also generate funds for these purposes through user fees.

### **Public Functions**

*Education Facility:* The mix of uses would include the opportunity to coordinate with the Miami-Dade County public schools or private educational institutions to provide a unique educational experience. Weather permitting, student groups could be transported to Stiltsville for classes and environmental education programs.

For many children, particularly the economically disadvantaged, a visit to Stiltsville could provide a unique and rare opportunity to learn about the bay environment and to gain an appreciation of the interactions between the land and water resources in south Florida.

The structure could be an enclosed classroom space with adjacent decking, or a covered, open-air facility with tables and chairs on an unimproved deck. This facility could host classes of all ages on a wide range of bay- and history-related subjects.

*Research Facility:* Research and resource management in Biscayne Bay is ongoing and increasing as resources are threatened and the importance of the protected environment of Biscayne National Park is better understood. Developing one of the structures into a science station would provide direct access to the resources of the bay, providing a staging area for a wide variety of sampling

and monitoring of numerous bay resources. The facility could also be a teaching facility for local schools such as the Maritime and Technology High School Academy, which focuses its curriculum on marine sciences. Appendix C includes a proposal for a cooperative arrangement between the Maritime and Technology High School Academy, the Ransom Everglades School, and the Rosensteel School of Marine and Atmospheric Sciences of the University of Miami to sponsor such a facility.

Research and science education opportunities might include field study with students and teachers living on the structure for periods of up to several days, focused research involving on-site sampling and analyses and maintenance of research plots in the bay, and automated acquisition and analysis that would provide scientific data for specific research projects.

*Meeting Space:* A structure could be developed to accommodate small meetings or retreats, which could be hosted by local businesses and corporations or by civic and non-profit organizations. Meetings may not be related in their purpose to Stiltsville or the park, but simply take advantage of the unique and inspirational setting to enhance the group's dynamics.

*Artist-in-Residence:* National park settings offer quiet and inspiration, attributes conducive to the creative pursuits of artists and writers. One structure might be rehabilitated to provide for overnight and longer-term needs (two to three weeks at a time) of one or two people. The structures located away from the Biscayne Channel would be most appropriate for a resident artist due to their relative seclusion.

*Rustic Overnight Campsite:* One or more of the structures could be renovated to serve general public overnight backcountry use on a reservation basis. Primitive facilities would be provided and all waste handling would be carry-in/carry-out.

### **National Park Service Functions**

With the implementation of Alternative A, the National Park Service would have an increased presence in the northern portion of the park.

*Visitor/Interpretative Center:* The visitor/interpretive center would be the focal point in Stiltsville for the general park visitor. It could be co-located with another facility, such as the satellite park office. Visitors might arrive via a commercial boat service (water taxi) or by private boat.

Information and educational opportunities could focus on the ecology of the bay, Stiltsville and its history, and the significance of water and land interactions in south Florida. Services, facilities, and exhibits would be oriented to serving small groups of visitors and would not require equipment or materials incompatible with sustainable uses of the structure.

Regardless of the structure chosen for this use, redesign and structural alterations would be needed to provide compliance with the Americans with Disabilities Act. Modifications would not change the current footprint of the selected building.

*Park Satellite Office:* Biscayne National Park's operations and management functions associated with public use of Stiltsville could be accommodated in one of the structures. Required space might include an office and limited storage. The structure could support activities such as patrols



and enforcement, resource management, and maintenance. The satellite park office might also serve some of the broader management and visitor contact needs of the northern portion of the park. At some point in the future, a park operations and visitor contact facility may be provided on the mainland, as recommended by many public comments and government partners, reducing the demands placed on the Stiltsville facility.

This alternative would require additional National Park Service staffing as follows:

One permanent park ranger to monitor user activity and provide law enforcement.

One permanent interpretive park ranger to serve as point of contact for the National Park Service.

One part-time resource management specialist to support park resource management activities and to monitor the renovation and subsequent uses associated with Stiltsville.

One part-time administrative assistant to provide support activities for the National Park Service operations at Stiltsville.

One part-time maintenance worker to maintain the satellite facility.

## **USER CAPACITY**

The capacity of the Stiltsville area would be set by the types of uses established for each structure. For example, an education facility might handle groups of 30 school children once or twice a day, while an artist-in-residence program might have only one or two people who stay for a week or more.

Table 1 presents estimated use levels at Stiltsville, assuming that each structure is used for a different purpose. If more than one structure were committed to a high-volume use such as education, the use levels would increase accordingly. The values in Table 1 include only direct uses of the structures and do not include boating activities. The values also include about 1,000 use days by park staff, because these contribute to the potential adverse affects to the environment by making boat trips and generating wastes that must be properly managed. Based on the mix of uses shown in the table, the structures would be used by about 16,500 to 23,500 members of the public annually.

## **PROTECTING THE RESOURCES OF THE PARK**

### **Access**

Boat impacts to bay bottom resources such as seagrasses include groundings and propeller scarring in the shallow areas of the flats around Stiltsville. To minimize resource damage, access to Stiltsville would be controlled. Measures would include the following:

**TABLE 1: ESTIMATED USE OF INDIVIDUAL STRUCTURES  
UNDER ALTERNATIVE A**

<b>Use of Structure</b>	<b>Number of People per Day</b>	<b>Frequency of Use (roundtrip from the mainland)</b>	<b>Boat Trips per Year</b>	<b>Maximum Annual Use (People per Year)</b>
Education Center	30 Students and Faculty	360 days/yr 1 boat trip/day	360	10,800
Interpretive Center	10 to 20 Visitors 1 Staff	360 days/yr 5-10 boat trips/day	1,800-3,600	3,960-7,560
Research Facility	3 to 5 Scientists	360 days/yr 1-4 boat trips/day	360-1,440	1,080-1,800
Meeting Facility	5 to 15 Participants	300 days/yr 1-3 boat trips/day	300-900	1,500-4,500
Artist-in-Residence	1 or 2 Residents	210 days/yr 1 boat trip/day	210	210-420
	1 to 5 Guests	90 days/yr 1 boat trip/day	90	90-450
Satellite Park Office	2 Staff	365 days/yr 4 boat trips/day	1,460	730
Total	53 to 80		4,580-8,064	17,910-24,800

Stiltsville facilities open to the public, such as the visitor/interpretive center, would be housed in structures close to the Biscayne Channel to minimize the need for navigation through non-marked channels in the shoals.

Access to some Stiltsville structures might be limited via reservation or special agreement, such as the artist-in-residence program, to maintain a specific visitor carrying capacity or type of visitor experience.

Water access to some structures or programmed activities might be limited to vessels operated by licensed, commercial operators, or by licensed operators employed by the organization providing the use of the structure.

Researchers or non-profit groups might be required to demonstrate proficiency in handling a boat to ensure user safety and protection of the park's resources.

Access routes leading to/from the structures from adjacent channels may be demarcated by buoys to better facilitate navigation and minimize disturbance to adjacent seagrass beds.

### **Fuels, Hazardous Material and Waste**

Occupants, operating organizations, and visitors would not be allowed to store hazardous or toxic materials (such as fuel for back-up generators) on the structures, except in very limited quantities and with secondary containment while people actually were using the structure. Waste management would be strictly controlled and appropriate methods for storage and removal (such as double-walled containers and carry-in/carry-out policies) would be required for solid waste, sanitary waste, and toxic materials. Construction materials would be as non-contaminating as possible, and would minimize use of materials that are pre-treated with hazardous chemicals.

Wastewater (vault toilets) and garbage collection/disposal management would be strictly controlled and appropriate methods for storage and removal would be required. All wastewater and garbage would be disposed of on the mainland in licensed wastewater treatment facilities and licensed landfills.

### **Other Resource Protection Measures**

Two-cycle outboard engines, currently in use by some users, discharge unburned fuels into the bay. All users would be encouraged to follow the National Park Service lead and begin using fuel-injected or four-cycle engines to reduce the adverse effects of fuels on bay waters. Stipulations would also include such measures as limiting the number of boats that could be tied to the structure or anchored in the vicinity of a structure.

Fishing line, plastic bags, six-pack plastic beverage rings, and other trash that can entangle animals or can float or be suspended in the water can negatively affect birds and marine life, and impact reefs when it is carried offshore by outgoing tides. Discarding these materials from the structures would be prohibited. In addition, the non-profit organization could use the education and interpretive forum available at Stiltsville to emphasize the importance of keeping these materials out of the bay waters.

### **CONDITIONS FOR REMOVAL OF STRUCTURES**

If a structure was severely damaged, as by hurricane or fire, a decision on whether the structure would be removed or restored would be made based on the process provided in the Criteria Used to Determine whether a Damaged Structure Should Be Removed or Repaired figure in Appendix B. These same criteria would be applied to Alternatives B, C, and D.

### **PROTECTING HEALTH AND SAFETY OF THE PUBLIC**

The measures identified above to protect the park resources would also protect the health and safety of the public. For example, proper wastewater handling and garbage disposal would ensure that toxic materials, sewage, and garbage would not enter the bay waters, where in high concentrations they could cause a health threat to area visitors and wildlife. Similarly, the use of commercial boat companies with Coast Guard-inspected watercraft and competent captains would help ensure the health and safety of visitors in transit.

Structures that would be used by the general public, particularly those dedicated to education and the visitor/interpretive center, would be designed to provide adequate protection for children and visitors with physical disabilities. This would include compliance with Americans with Disabilities Act requirements, provision for appropriate railings, and design of docks that would allow people to disembark from boats easily and safely.

Adequate space would be provided on one stilt structure (satellite park office or visitor/interpretive center) or on the adjacent mainland (staging facility) to allow storage for enforcement, communications, resource inventory and monitoring, search and rescue, and emergency response supplies and equipment. The availability of this equipment along with trained park staff in the northern portion of the park would enhance the health and safety of park users at Stiltsville and throughout the area.

### **SUSTAINABLE, ENVIRONMENTALLY COMPATIBLE DESIGN PRINCIPLES**

Renovation of the structures would maximize the use of recycled materials and would avoid the use of timber treated with toxic chemicals that could, over time, leach into the water. Other design elements would include avoiding features that would make the structures attractive perching places for birds, such as horizontal railings or flat-topped posts.

The Stiltsville structures would require regular upkeep and cyclic repair and maintenance. Water storage tanks, wastewater vault storage systems, and solar power or small generators would all be designed to minimize effects to the environment, as well as for ease of maintenance and periodic repair or replacement.

### **FINANCIAL RESPONSIBILITY FOR SELF-SUSTAINING OPERATION OF STILTSVILLE**

Regardless of the type of use designation, the stilt structures would be financially self-sustaining. Depending on the type of use and the type of providing organization, agreements, contracts, or other appropriate operating arrangements would ensure that management and maintenance costs would be paid entirely by the user organization, or, where appropriate, operations and maintenance costs might be borne directly by the Stiltsville organization. Agreements with operating organizations would authorize the charging and retention of fees that would then be used for operation and upkeep of the structure. Initial construction costs to bring the structures up to standards for their intended uses would be borne by the non-profit organization. The cost to renovate each structure would depend on the intended use of the structure. Structures such as tenting platforms and reserved primitive day and overnight use structures would provide very minimal or no services and could be renovated for approximately \$200,000. Facilities that could accommodate school groups, conferences, environmental education, field schools, or research activities and provide visitors with potable water, bathrooms, minimal lighting or running water could require as much as \$500,000 to renovate.

Operations and maintenance costs would be the responsibility of the non-profit organization except for those structures used by the National Park Service for a satellite park office or for interpretive or educational purposes. Operation costs for an National Park Service facility would be based on the requirements of four full-time-equivalent staff positions.

## **ALTERNATIVE B: NATIONAL PARK SERVICE DEVELOPMENT AND MANAGEMENT TO PROVIDE FOR PUBLIC USE**

### **CONCEPT**

Under Alternative B, the National Park Service would renovate, manage, operate, and maintain the seven existing Stiltsville structures. The range of uses under this alternative would be similar to Alternative A, including the availability of some structures for use by private individuals or groups through a park reservation system.

Similar to Alternative A, the National Park Service would renovate, operate, and maintain one structure to establish a presence in this northern portion of the park to monitor and enforce the leasing program and provide user information and limited interpretive programs. The National Park Service would also establish a landside administrative and visitor contact facility at some location that would support the Stiltsville facilities and functions. Staffing would be the same as Alternative A.

User capacity, staffing, conditions for removal (hurricane damage or fire) and actions related to protecting resources, protecting public health and safety, and sustainable environmental design principles would be the same as Alternative A.

### **FINANCIAL RESPONSIBILITY FOR SELF-SUSTAINING OPERATION OF STILTSVILLE**

The National Park Service would initiate a market analysis to determine the feasibility of having concession contracts to manage and operate Stiltsville for selected uses. This approach would allow the National Park Service to benefit from franchise fees that would then be used for capital improvements and maintenance costs. Other uses such as a research facility or educational facility may be operated under other appropriate operating arrangements with the National Park Service. The National Park Service would also seek federal and donated funds and user fees to repair and rehabilitate structures used to support a variety of education and interpretation opportunities. The actual day-to-day management and maintenance would be performed by the National Park Service or by commercial operators under concession contracts or other appropriate arrangements to the National Park Service, depending on the determination of use and management responsibility. Where possible the National Park Service would seek to make the structures self-sustaining.

## **ALTERNATIVE C: COMPETITIVE LEASING TO PROVIDE FOR PUBLIC AND PRIVATE USE**

### **CONCEPT**

If an acceptable non-profit organization cannot be found, this alternative would become the preferred. The Stiltsville structures, with the possible exception of one structure designated for National Park Service use, would be competitively leased for private use based on current authorities (36 CFR, Part 18 as amended by regulations published in the *Federal Register* on December 27, 2001). The National Park Service would issue, approve, monitor, and enforce the leasing program. All potential future lessees, including the former leaseholders, would compete on the same basis for the right to lease these structures. The purposes for which the structures could be leased would be similar to the range of uses defined in Alternative A, as well as for private uses similar to those under the former non-renewable leases. The Request for Proposal (RFP) would include scoring factors weighted towards responses from individuals or groups that would use the structures for park mission type purposes.

As in Alternative A, the National Park Service could exercise the option of renovating, operating, and maintaining one structure to establish a presence in this northern portion of the park to monitor and enforce the leasing program and provide user information and limited interpretive programs. Staffing would be the same as Alternative A.

If a sufficient number of lease proposals are not received that would allow for public use or designate uses that meet the park mission, then leases could be granted to individuals or groups for their exclusive use. The nature and frequency of use by these groups would not differ substantially from practices that have occurred since 1985 when the National Park Service acquired the land on which the structures are built.

All future leaseholders, regardless of type of use, would be responsible for renovating, operating, and maintaining their respective structures to specified standards set by the National Park Service. Leaseholder responsibility would also include the purchase of liability insurance and the costs of repairs and maintenance of these structures. Leases would include the following types of stipulations:

The leased premises would be used only for purposes prescribed in the lease.

The lessee would not expand the size of the structure.

The lessee would agree to maintain the structure in a reasonably sound, livable, and attractive condition and would be required to meet state and federal health and safety codes.

### **USER CAPACITY**

In the past, leases have been held by private clubs and organizations, public clubs, corporations, and unaffiliated groups of private citizens, with the leaseholder receiving rights of exclusive use. The structures have been used as campsites and have included such activities as overnight stays,

day recreation, family and business entertainment, and social parties. Group sizes have ranged from two or three people to more than 300 people at one time.

The nature and frequency of use by these leaseholders would not differ substantially from practices that have occurred since 1985, when the National Park Service acquired the land on which the structures were built. However, the number of people on a structure at any one time would be strictly limited under Alternative C compared to the use pattern that formerly took place in the structures, as shown in Table 2.

For those Stiltsville structures used exclusively by leaseholders and their guests the annual capacities would be as shown in Table 2.

**TABLE 2: ESTIMATED USE OF INDIVIDUAL STRUCTURES  
UNDER ALTERNATIVE C**

Typical Use per Structure	Number of People at One Time	Frequency of Use (roundtrip from the mainland)	Boat Trips per Year	Maximum Annual Use (People per Year)
Typical Weekend	6-10	94 days/yr 2-4 boat trips/day	188-376	564-940
Special Weekend <sup>a/</sup>	35-75	10 days/yr 5-10 boat trips/day	50-100	350-750
Typical Weekday	4	130 days/yr 1 boat trip/day	130	520
Times 7 Structures			x 7	x 7
Total			2,576-4,242	10,038-15,470

a/ Special weekends are usually major holidays and periodic occasions with larger groups of guests or members.

The mix of uses associated with this competitive lease concept for public use (Table 1) and individual private use (Table 2) would not be known until leases on all structures have been evaluated and awarded. It is assumed that the total capacity of Stiltsville would be within the range of 10,038 people per year under Alternative C (Table 2) and 24,800 people per year under Alternative A or B (Table 1).

## PROTECTING THE RESOURCES OF THE PARK

Actions to protect park resources would be the same as Alternative A, but would emphasize stipulations in the competitive leases to require that the best construction and management practices be employed in the renovation, use, and maintenance of these structures and all water-related activities associated with their use.

## PROTECTING THE HEALTH AND SAFETY OF THE PUBLIC

Actions to protect public health and safety would be the same as in Alternative A, but would emphasize stipulations in the competitive leases to ensure that occupancy limits would not be

## ALTERNATIVES

exceeded and that the structures would be renovated and maintained in a reasonably sound, livable, and attractive condition. Any remodeling or restoration would have to meet current state and federal building codes. Depending on the designated use, some structures would have to be in compliance with all Americans with Disabilities Act standards. Each leaseholder would be held liable for all injuries associated with the use of the structure.

### **SUSTAINABLE, ENVIRONMENTALLY COMPATIBLE DESIGN PRINCIPLES**

Actions to ensure sustainable, environmentally compatible design principles would be the same as Alternative A, but would emphasize the use of environmentally sustainable building materials for remodeling or renovation.

### **FINANCIAL RESPONSIBILITY FOR SELF-SUSTAINING OPERATION OF STILTSVILLE**

Lessees would have financial responsibility for renovation of their structures, as reflected in the costs presented in Alternative A, and be required to follow National Park Service sustainable guidelines and standards in the design and reconstruction. The National Park Service would provide a substantial portion of the cost to make the buildings structurally sound prior to renovation, such as replacing pilings where needed. Lessees would also assume total financial responsibility for the management, operation, and maintenance of the structures, and would pay “fair market” value for the structures. The National Park Service would assume financial responsibility for only the structure(s) occupied by the park to maintain a monitoring, enforcement, and public contact function. In addition, the leaseholders would pay the National Park Service an annual fee for use of the structures. These provisions would be consistent with current practices.



## **ALTERNATIVE D: NO ACTION – REMOVAL OF THE STILTSVILLE STRUCTURES**

### **CONCEPT**

Under this alternative, at the end of the special use permit or any extension of that agreement, the National Park Service would require the implementation of the provision contained in all the nonrenewable leases at Stiltsville that call for the removal of all man-made structures from Biscayne National Park.

The leaseholders would adhere to standards set by the National Park Service for demolition of the structures and removal of material. These would include operation and anchoring of barges, containment of silt and minimization of bay bottom disturbance, and containment of demolished material. Standards would ensure the least damage to park resources.

Management and operations within the northern portion of the park would occur similarly to current conditions. Operations for all division functions, including resource and visitor protection, interpretation, resource management, science, and maintenance, would originate from park headquarters and the Dante Fascell Visitor Center, the park's main visitor center. These are located at Convoy Point in the southwest part of the park, approximately 22 miles from Stiltsville. Staff would access the site and conduct park operations in the Safety Valve area from boats after traveling from Convoy Point. This would include transport of equipment and staff and would involve minimum response times to needs in the area from 30 to 60 minutes. Contact with visitors in the Safety Valve area would take place intermittently when staff are available in the area. Interpretation of resources that are present in and important to this portion of the park would take place at the Dante Fascell Visitor Center.

The cost to demolish the structures and remove materials would range from approximately \$100,000 to \$150,000, depending on the size and location of the structure.

## **ALTERNATIVES ELIMINATED FROM FURTHER STUDY**

During the public involvement and scoping process, several other alternatives for management of Stiltsville were proposed. These alternatives, and the reasons they were eliminated from further study, are presented below.

### **SHORT-TERM LEASES**

This alternative would involve issuing short-term leases. Under this arrangement, the leaseholder would have little incentive to provide capital development, operation, and maintenance costs because of having little chance of getting a return on the investment.

### **MOTHBALLING**

This alternative would involve letting the structures stand unused in the bay. Leases would not be reissued, and the structures would be off-limits to all park users. This alternative was eliminated from further consideration for the following reasons:

The mothballing of these structures would create an attractive nuisance with people drawn to the site due to the visual appeal of these structures within the bay setting. Vandalism of the structures would most likely increase due to a limited law enforcement presence that would be associated with this alternative.

Without routine maintenance, the structures would fall into disrepair and would pose a serious public safety risk to curious visitors who might choose to trespass on these deteriorating structures.

### **BOUNDARY ADJUSTMENTS TO REMOVE STILTSVILLE FROM BISCAYNE NATIONAL PARK**

There have been numerous proposals to adjust the boundaries of Biscayne National Park to exclude Stiltsville and the surrounding area or portions of the surrounding area from the park. These proposals often include such features as boat traffic across the Safety Valve shoals to provide access and swapping lands within the park, including park areas with lush seagrasses, for biologically less valuable, unvegetated bay bottom in areas outside the current boundaries. All of these boundary adjustment proposals have been eliminated from further consideration for the following reasons:

These actions would create difficult-to-administer gaps in the now-continuous park. Virtually since the creation of the national park system, Congress and the National Park Service have been striving to consolidate lands within park boundaries under National Park Service administration. Boundary adjustments in the Stiltsville area would have the opposite result.

Because the bay surface is virtually featureless, it would be difficult for rangers and visitors to determine where National Park Service jurisdiction would begin and end,

necessitating use of global positioning system (GPS) equipment and accurate maps in every boat to determine the location of the park boundary.

Most boundary adjustment proposals would remove a portion of Biscayne Channel from Biscayne National Park. The channel, which is completely within the park, is a major recreational corridor between Miami, Biscayne Bay, and the open ocean. Splitting jurisdiction of this important waterway between the National Park Service and the state of Florida would confuse users and complicate management of this area and law enforcement action.

An estimated 85 percent of the water that flows into Biscayne Bay comes through the area known as the Safety Valve, shown on the Location map. This area provides an essential stabilizing barrier between Biscayne Bay and the coastal ecosystem to the east. This area has never been dredged, and all the channels have formed naturally (Canzanelli 2001). Cutting new channels in this area through dredging or boats running aground and damaging the seagrass bed could have unpredictable and potentially deleterious effects on the hydrology of the entire bay. During tide changes, water flows through this area at a rate of 80,000 gallons a minute. New channels could change the natural flow of water, removing sand from some sites and depositing it in others. Conversely, the rush of water associated with tides may scour the new channels into deep, wide trenches with strong currents. This could change the flow of water throughout the remainder of the Safety Valve and disrupt the natural processes throughout the area (Canzanelli 2001).

The park actively works to protect seagrass beds, which stabilize the bottom and serve as essential nurseries for many species of marine life. Any boundary adjustment in the Stiltsville area would affect the enforcement of resource protection laws and regulations and could cause major adverse effects to seagrass beds. In areas where new channels were formed, previously undisturbed seagrass beds would be removed. Even if channels were not actively dredged, boats accessing Stiltsville from various directions would run across areas of pristine seagrass that no longer would receive the level of protection afforded by their current location in the park. The cumulative effect of this boat traffic would be to cut new channels through the seagrass and to destabilize the bottom (Canzanelli 2001).

### **PREFERRED ALTERNATIVE**

Alternative A is the preferred alternative. Selection of the preferred alternative was based on the overall ability of the alternative to meet park objectives, support the purpose of the park, and minimize adverse effects to the resources of the park while providing for public use and enjoyment. Each of the action alternatives (A, B and C) have similar environmental effects for many of the impact topics addressed in the environmental analysis. Each of the action alternatives would result in the following:

Benefits would be realized by broad segments of the public through increased public access to the Stiltsville structures and improved education about the surrounding marine resources.

There would be improved ability to deliver important interpretive and educational information to visitors using the northern portion of the park.

The ability to preserve an important and distinctive icon of past and present life in south Florida would exist, as well as an opportunity for the public to experience Stiltsville and learn of its history.

The National Park Service would increase its capability to carry out operational and administrative responsibilities in the northern portion of the park.

In addition, Alternative A would include community stakeholders, through representation on the board of the non-profit Stiltsville organization, along with the National Park Service in the cooperative management of Stiltsville. Alternatives A and C would also allow the operation and maintenance of the Stiltsville structures on a self-sustaining basis, with little or no commitment of federal funds.

## **ENVIRONMENTALLY PREFERRED ALTERNATIVE**

The environmentally preferred alternative is defined by the Council on Environmental Quality (1978) as the alternative that best meets the criteria or objectives set out in Section 101 of the National Environmental Policy Act. The environmentally preferred alternative best meets the following requirements:

Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

Ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.

Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

Preserve important historical, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.

Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.

Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment — the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. This discussion also summarizes the extent to which each alternative meets Section 102(1) of the National Environmental Policy Act, which asks that agencies administer their own plans, regulations, and laws to be consistent with the policies outlined above to the fullest extent possible.

Implementation of Alternative A would offer protection of the surrounding bay environment through implementation of best management practices for maintenance and operations of the structures and through controlled access to and use of the structures. Operating requirements would include recycling and use of renewable energy sources. Additionally, increased public education and enhanced research would improve the public's knowledge and appreciation of Biscayne Bay. The Stiltsville non-profit organization would act to improve the structures to enhance public safety and access to the structures within the surrounding seascape, and would provide a wide range of beneficial public uses for civic and youth groups, the general public, the research and education communities, and National Park Service park administration. This would occur in a manner that was sustainable within the bay environment. Through enhanced access for the general public regardless of affiliation with a particular group, a broad range of community members would be able to visit and benefit from the Stiltsville structures and their location within a protected natural environment.

Alternative B would have impacts on park resources and visitor use and experience at Biscayne National Park very similar to those described for Alternative A. Management of the site by

## ALTERNATIVES

National Park Service would place a greater portion of the costs of rehabilitation and operations on the federal government.

Alternative C would also have impacts on park resources and visitor use and experience similar to those described in Alternative A; however, realization of many of the public benefits described in Alternative A would depend on viable bids to provide public access being offered to and accepted by National Park Service from private individuals or entities. A high number of leases offering services similar to those provided under Alternative A would result in broad public benefit. Leases that provide only exclusive private use would serve to limit public access and thus the public benefit that would be provided by the Stiltsville structures.

Alternative D, the no action alternative, would satisfy the six requirements of Section 101 of the National Environmental Policy Act. Alternative D would remove the structures and would provide the greatest potential to restore the bay's natural resources and protect natural and cultural resources over time. Under Alternative D, the area available for seagrass bed regeneration would increase which would provide habitat and forage for numerous wildlife and bird species including endangered and threatened species as well as enhance ecologically critical areas. Reduced use of the area by visitors would provide enhanced protection to submerged cultural resources. Removal of the structures would also eliminate safety hazards presented by their use. Although removal of the structures would eliminate their use by the public and the aesthetic contribution that many feel they make, Alternative D would continue to provide for a wide range of recreational opportunities in the Stiltsville area. Compared to the action alternatives, removing the structures under Alternative D would result in a loss of an opportunity to present the history of the area in the unique environment of Stiltsville; however, the history of the structures and the Stiltsville area could be told using other interpretive means. Because the structures have not been accepted for listing on the National Register of Historic Places, it is considered by the National Park Service that the environmental benefits that would be achieved with removal of the structures outweigh the status of the structures as historical resources.

Based on the environmental analysis prepared for management of the Stiltsville structures, Alternative D is considered the environmentally preferred alternative. Although Alternative A satisfies to some degree the six requirements detailed above including preservation of structures that some deem an important component of south Florida's history, Alternative D attains the widest range of beneficial uses of the environment, natural and cultural preservation, and visitor safety and enjoyment, without degradation of resources.

## **SUMMARY OF ALTERNATIVES**

### **DEGREE TO WHICH EACH ALTERNATIVE MEETS THE PURPOSE, NEED, AND OBJECTIVES**

Table 3 summarizes the ability of each alternatives to meet the objectives. None of the alternatives would result in environmental effects that would detract from the National Park Service's ability to fulfill the park's purpose "to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty." Environmental impacts would be of a negligible to minor magnitude, and the effects of activities associated with the structures could be mitigated by the use of appropriate operations, maintenance, and construction best management practices. Under the no action alternative (Alternative D), no pollutants would be associated with Stiltsville structures following removal.

Alternatives A or B would provide the best opportunity to enhance visitor enjoyment and appreciation of important park resources by increasing public use of and access to the Stiltsville structures. Under Alternative A, one or more organizations or individuals may create a non-profit organization under the regulations of the Internal Revenue Service and non-competitively enter into an appropriate arrangement with the National Park Service for the management and use of the Stiltsville structures. Under Alternative B, the National Park Service would operate and manage the structures for a range of public uses, including environmental education, scientific research, artistic pursuits, and organizational meetings and retreats. Through competitive leases Alternative C would seek to achieve a range of public uses similar to Alternatives A and B. Alternative C could continue exclusive use of the structures by a small number of leaseholders and their guests if public use leases prove unsuccessful. Alternative D would require the removal of all man-made structures from Biscayne National Park, obviously eliminating all opportunity for visitor enjoyment.

Alternative A would control access to the structures by the use of licensed, knowledgeable boat captains for commercial transit services and through monitoring and enforcement of restrictions on private boat access. Alternative B would involve commercial transportation or transportation provided by the entity operating the structure or managing the use. Alternative C would continue uncontrolled access to the structures by leaseholders and their guests. Although the leaseholders typically have adequate knowledge and skill to appropriately access the structures, their guests sometimes stray from deeper waters, with undesirable effects on marine resources. In addition, the leaseholders and their guests may operate vessels under the influence of alcohol, which may increase incidents leading to resource damage (such as from boat groundings), accidents, or fatalities. Boat traffic under Alternative D would include only general public uses of the Biscayne Channel or Safety Valve flats.

Alternatives A and B would provide onsite staff who would enhance the ability to manage and protect park resources through monitoring and research, enforcement, visitor information and education, and maintenance. Alternatives C and D would continue to base activities for the northern portion of the park out of Convoy Point, 15 miles away.

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM**

<b>Objective</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Water Quality				
Pollutants associated with the use of the structures and watercraft emissions that enter the water are managed to comply with state and Clean Water Act antidegradation policies, goals, and regulations.	Reconstruction/rehabilitation and maintenance of the structures using “green” construction and maintenance materials and methods would reduce the introduction of pollutants into the surrounding environment. Boat traffic would still be present to bring visitors to the site. Waste removal procedures would be implemented and strictly enforced. Park or commercial-operated watercraft with 2-cycle engines would be phased out and replaced with less-polluting four-cycle or direct-injection engines.	Same as Alternative A.	Same as Alternative A.	No pollutants would be associated with Stiltsville structures following removal.  Demolition of the structures using “green” construction methods would reduce the introduction of pollutants into the surrounding environment. Removal of the structures would also eliminate sewage, trash, and hazardous wastes entering the environment. Without the presence of the structures, boating activity would decline and pollutant emissions to the water would be reduced.



**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

Objective	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Aquatic organisms, including seagrasses, are protected from activities associated with the use of the structures, including sediment disturbances, to ensure the viability of the bay's ecosystems.	Sediment disturbances and disruption to seagrass beds in the form of vessel groundings would be reduced due to the onsite presence of park staff, trained operators bringing visitors to the site, and the regulated use of the structures. Aquatic resources would be protected due to the care taken to limit or eliminate spills, leaching, and other water quality impacts.	Same as Alternative A.	Same as Alternative A.	No onsite uses would be present to cause undesirable effects. Because park staff would be located at Convoy Point, more than 15 miles from Stiltsville, limited management and enforcement presence would be available to meet general park resource management goals in the northern part of the park.
Biological Resources	Guidelines pertaining to the use of fishing line, trash and debris disposal would be developed and implemented. Limiting access to some structures to skilled boat operators would decrease the accident potential (groundings and prop scarring) to submerged habitats. The elimination of intentional wildlife feeding and increased educational/interpretive programs explaining the potential adverse affects of wildlife feeding would benefit biological resources.	Same as Alternative A, except the National Park Service would control use.	Same as Alternative A, except control of use would be by leaseholders under terms of lease with National Park Service.	No onsite activities would be present to cause undesirable effects to resources. Upon removal, natural recruitment and recovery processes would begin, resulting in seagrass beds potentially reclaiming previously disturbed areas where the structures were located and area restored to near-natural conditions.
Activities associated with the use of the structures occur in a manner that minimizes effects to aquatic resources and protects birds, fish, and other organisms, including endangered or threatened species and their habitats.				

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

Objective	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
The close proximity of the structures to the resource is used to educate the public and enhance their understanding of the fragility of the marine environment in the bay.	Educational efforts provided on-site would promote the potential beneficial and negative consequences of everyday interactions with the fragile marine environment. Education would target groups that currently may have only limited opportunity to use the park.	Same as Alternative A.	Same as Alternative A to the extent that private bids would be offered and accepted by National Park Service to provide public functions under the terms of the lease.	Removal of the structures would eliminate opportunities for facility-based programs in the immediate vicinity. Without a northern base of operations, the opportunity to offer any educational programs in the northern part of the park would be very limited.
Biota are protected from adverse effects of contaminants that could be released from the structures.	New construction and repairs to the structures would be done with sustainable materials (e.g., with recycled plastic marine lumber rather than with treated lumber containing chemicals that could leach into the water from rain or sea splash). Use of paints and treatments with anti-fouling preservatives would be minimized.	Same as Alternative A.	Same as Alternative A.	Removal of the structures would remove the source of contaminants.

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

Objective	Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use	Alternative B: National Park Service Development and Management to Provide for Public Use	Alternative C: Competitive Leasing to Provide for Public and Private Use	Alternative D: No Action Alternative - Removal of the Stiltsville Structures
Endangered or Threatened Species				
Endangered or threatened species and essential fish habitat are protected from harmful interactions with Stiltsville visitors and watercraft.	Access to the structures by trained boat operators would increase substantially. Onsite park staff would monitor access to the structures. Appropriate measures would be taken to minimize erosion and turbidity from occurring and impacting essential fish habitat during construction activities. All construction activities would require the use of spill prevention devices (i.e., floating booms and oil absorbing materials) to reduce the impacts of unpredicted occurrences and accidents. All construction activities would be conducted under the supervision of a biologist to ensure that no direct impacts to sensitive marine resources occurred.	Same as Alternative A.	Same as Alternative A, except the presence of trained boat operators would occur only if it was required as a part of the lease agreement.	Removal of the structures would eliminate structure-related threats to endangered or threatened species.

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

<b>Objective</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Cultural Resources				
Submerged cultural resources are protected. Any renovation, demolition, or construction in the Stiltsville vicinity complies with Section 106 of the National Historic Preservation Act.	Onsite presence of park staff would more readily monitor visitor activity around known submerged cultural resources. All construction and management actions associated with the structures would be done in accordance with relevant laws and regulations.	Same as Alternative A.	Same as Alternative A.	Removal of the structures would be done in accordance with relevant laws and regulations. Structure-related threats to cultural resources would no longer be present.
Visitor Experience and Visitor Safety				
A high-quality, safe, educational, balanced, diverse, and accessible (both general access and handicap) public visitor experience is provided at Stiltsville.	The alternative would provide an interpretative center, educational facilities, research facilities, and other amenities that would be available to the general public with limitations only for the benefit of the environment.	Same as Alternative A.	Same as Alternative A, except that public visitor experiences would be offered to the extent that private bids offered to and accepted by National Park Service would provide for public uses under terms of the lease.	Removal of the structures would eliminate opportunities for facility-based visitor experiences in the immediate vicinity. Without a northern base of operations, the opportunity to offer park programs in the northern part of the park would be very limited.

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

Objective	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Information is effectively conveyed to the public about the area's history, natural resources, and cultural resources, including those in the immediate Stiltsville vicinity and at nearby locations such as Soldier Key and Key Biscayne.	Visitors to Stiltsville would receive information and participate in programs provided at an onsite interpretive center or through educational and scientific functions provided by other organizations on one of the other structures.	Same as Alternative A.	Same as Alternative A, except that public information that provide for public uses under terms of the lease would be offered to the extent that private bids would be offered and accepted by National Park Service.	Removal of the structures would eliminate opportunities for facility-based public information in the immediate vicinity. Without a northern base of operations, the opportunity to offer park programs in the northern part of the park would be very limited.
Sound Environment/Noise				
Human-caused intrusions on the natural soundscape are minimized.	Improvements in the natural soundscape may occur due to the use of public transportation to access the structures and net reduction in the number of boats navigating throughout the area. The effects from the routine operations and construction activities would be managed to lessen intrusions on the soundscape.	Same as Alternative A.	Same as Alternative A.	Removal of the structures would eliminate structure-related intrusions on the natural soundscape.

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

<b>Objective</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
The structures' location close to the environment is used to teach the public about the importance of preserving the natural soundscape.	One or more structures would be dedicated to educational efforts that would emphasize the unique and endemic characteristics of Biscayne National Park and interpret concepts of natural soundscapes in national park settings and the effects of Miami's urban environment in Biscayne National Park.	Same as Alternative A.	Same as Alternative A, except that public information and education would be offered to the extent that private bids that provide for public uses under terms of the lease would be offered and accepted by National Park Service.	Removal of the structures would eliminate opportunities for facility-based public information and education in the immediate vicinity. Without a northern base of operations, the opportunity to offer park programs in the northern part of the park would be very limited.
Visual Resources				
The unique visual character of Stiltsville is maintained.	Improvements would be designed to maintain the character of the structures without changing the original vernacular style and scale of the structures.	Same as Alternative A.	Same as Alternative A.	The structures would no longer be present and their visual character would be lost.
The natural seascape viewshed is restored when the structures can no longer be sustained without rebuilding under the guidelines established in this plan (the Criteria Used to Determine whether a Damaged Structure Should Be Removed or Repaired in Appendix B).	The Criteria Used to Determine whether a Damaged Structure Should Be Removed or Repaired figure would be used to determine when a structure was no longer suitable for use and should be removed.	Same as Alternative A.	Same as Alternative A.	The natural seascape would be fully restored.

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

Objective	Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use	Alternative B: National Park Service Development and Management to Provide for Public Use	Alternative C: Competitive Leasing to Provide for Public and Private Use	Alternative D: No Action Alternative - Removal of the Stiltsville Structures
Park Operations				
A base for park operations is provided in the northern portion of the park.	A base for park operations would be provided either within one of the structures or at a yet-to-be-determined landside location.	One of the structures would be used to support park administration functions for Stiltsville and the northern portion of the park including resource management and visitor protection, interpretation, and maintenance.	Same as Alternative A.	There would be no base for park operations at Stiltsville.
Structural integrity improvements and regular preventative maintenance minimize the need for cleanup following major storms.	Rehabilitation of the structures and the implementation of regular maintenance would improve the ability of the structures to withstand storms.	Same as Alternative A.	Same as Alternative A.	The structures would be removed.

**TABLE 3: OBJECTIVES, AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM (CONTINUED)**

Objective	Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use	Alternative B: National Park Service Development and Management to Provide for Public Use	Alternative C: Competitive Leasing to Provide for Public and Private Use	Alternative D: No Action Alternative - Removal of the Stiltsville Structures
Socioeconomics				
The park works cooperatively with concessioners, local businesses, or organizations to provide services and visitor opportunities.	Stiltsville structures would be managed to provide a mix of public uses operated by non-National Park Service entities. These would include transportation services to the site, services at local marinas that stage trips to the site, and scientific, educational, civic, and business organizations that would have access to the structures.	Same as Alternative A.	Same as Alternative A.	The structures would not be present and services would not be provided.



## **IMPORTANT FEATURES OF EACH ALTERNATIVE**

Table 4 summarizes the key features of the alternatives. Alternatives A and B provide for a mix of public uses, serving between 17,910 and 24,800 different individuals with 4,580 to 8,064 boat trips per year. Alternative C provides for largely private social uses, serving between 10,038 and 15,470 visitors with 2,576 to 4,592 boat trips per year. Eliminating the structures under Alternative D would eliminate all associated public use. Alternatives A and B would provide the National Park Service with a base for park operations in the northern portion of the park, while Alternatives C and D would not.

## **IMPACTS OF EACH ALTERNATIVE**

Table 5 provides a summary of the impacts of each alternative retained for analysis. More detailed information on the effects of the alternatives is provided in the “Environmental Analysis” section.

**TABLE 4: SUMMARY OF IMPORTANT FEATURES OF THE ALTERNATIVES**

<b>Feature</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Management purpose	Broad public use for education, interpretation, research, and inspiration	Broad public use for education, interpretation, research, and inspiration	Private uses plus broad public use for education, interpretation, research, and inspiration	Site restoration
Managing entity	Stiltsville Non-profit Organization	National Park Service	Private leaseholders under terms of lease with National Park Service	National Park Service
Total visitor days annually <sup>a/</sup>	17,910-24,800	17,910-24,800	10,038-15,470	0
Annual boat trips to Stiltsville	4,580-8,064	4,580-8,064	2,576-4,242	0
Costs to the National Park Service				
Construction (per structure)	Costs borne by Stiltsville Non-profit Organization	Approx. \$200,000 -\$500,000 <sup>b/</sup>	Approx. \$200,000 -\$500,000 <sup>b/</sup>	N/A
Demolition (per structure)	N/A	N/A	N/A	Approx. \$100,000 - \$150,000
Source of offsetting income	Revenue through donations, user fees, or operating agreements	Commercial service contracts, potentially, and user fees	Operating agreements with leaseholders, potentially	None needed
Provides a base for park operations in the northern portion of the park	Yes	Yes	Yes	No

a/ Visitor days include only use associated with the structures and do not include general public uses of the Biscayne Channel or Safety Valve flats.

b/ The cost to renovate each structure would depend on the intended use of the structure. See description of Alternative A for a discussion of renovation costs.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Water Quality	The continued use of structures would result in a negligible to minor adverse impact to the water quality in the surrounding area. Long-term, indirect beneficial impacts would result from educational, social, and research programs that would be initiated under this alternative. Activities associated with Alternative A would contribute negligibly to the cumulative adverse effects on water quality resulting from increased urbanization and recreation in south Florida.	Same as Alternative A.	Same as Alternative A.	Demolition of structures would result in localized, short-term, negligible to minor adverse affects on water quality. A reduction of watercraft traffic in the area would represent a negligible to minor, long-term benefit to water quality. Minor to moderate long-term benefits would also accrue from the elimination of spills, sewage, or hazardous materials entering the water associated with use of the structures. There would be long-term, indirect, adverse impacts resulting from a lack of educational, social, and research programs with implementation of the No Action Alternative. The cumulative effects of this alternative would be beneficial and negligible.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Biological Resources	Use of the structures and watercraft in the area would result in adverse, long-term, localized and negligible to moderate effects to biological resources. Construction noise may displace wildlife or disrupt behavior that would be considered a localized, temporary and negligible to minor adverse effect. Adverse cumulative effects from implementation of Alternative A on biological resources would be negligible.	Same as Alternative A.	Same as Alternative A.	Long-term, negligible to moderate, beneficial effects would accrue with the removal of structures from improved water quality and seagrass habitat. Demolition activity would result in negligible to minor, localized and temporary adverse effects by disturbing and/or displacing wildlife and habitat. The beneficial effects of this action negligibly supports the actions implemented by other agencies to restore and protect Biscayne Bay.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Endangered or Threatened Species	Use of structures and watercraft access would cause undesirable effects on critical habitat in the Stiltsville area. With increased National Park Service presence in the area to enforce watercraft regulations, the short- and long-term adverse effects on endangered and threatened species would be negligible. Educating the public about the consequences of their activities on protected wildlife and their habitat would reduce impacts in the future. The implementation of Alternative A would have long-term negligible cumulative adverse impacts on endangered and threatened species, and their habitats.	Same as Alternative A.	Same as Alternative A.	The long and short-term effects of the no action alternative on endangered or threatened species would be localized and negligible. The beneficial impacts on endangered and threatened species would include preservation and enhancement of their habitat. The cumulative effects of this plan and others to improve water quality and clarity in Biscayne Bay would result in minor beneficial effects on federal- and state-listed species.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Ecologically Critical Areas	Construction activity would result in indirect negligible to minor short-term impacts to ecologically critical habitats. Use of boats to access structures would continue to cause undesirable effects on seagrass beds and substrates representing a localized, long-term and minor to moderate adverse effect to this essential fish habitat. Long-term, adverse effects on ecologically critical areas from discarding of wastes into the environment would be minor. Educating the public about the consequences of their activities on fragile estuarine ecosystems would probably reduce adverse effects to them in the future. Negligible cumulative effects would occur with this alternative.	Same as Alternative A.	Same as Alternative A.	Localized effects to the ecologically critical areas during structure removal activities would be negligible to minor and short-term. The localized long-term beneficial effects of Alternative D on essential fish habitat in the area would be minor to moderate with a reduction in boating activity. The cumulative effects of this plan and others improve water quality and clarity would result in a minor to moderate beneficial effect on ecologically critical areas in the bay.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Cultural Resources	Negligible long-term adverse impacts on submerged cultural resources from construction activity. Negligible to minor localized long-term adverse effects to cultural resources would result from the continued use and access to the structures compared to the no action alternative. The cumulative effects to cultural resources would be adverse and negligible to minor.	Same as Alternative A.	Same as Alternative A.	The removal of the structures would result in the loss of an opportunity to present the history of the area in the unique environment of Stiltsville. The demolition activities would result in long-term negligible to minor adverse impacts to submerged cultural resources. Reduced visitor use of the area after structure removal would result in long-term negligible to minor benefits to submerged cultural resources in the area. The cumulative effects to cultural resources would be adverse and negligible to minor.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Visitor Use and Experience and Visitor Safety	Long-term, minor to moderate, beneficial effects by providing for a broad range of public uses and opportunities for continued public enjoyment of Stiltsville. Increased presence of park staff would provide enhanced public awareness of Biscayne National Park and long-term, minor to moderate benefits. Long-term, minor to moderate, beneficial effects on visitor health and safety would result from increased staff, additional controls on boating practices, and physical structural and safety improvements to the structures. Moderate to major, cumulative effect.	Same as Alternative A.	Long-term, minor to moderate, beneficial effects to the extent that leases provide for a broad range of public uses and opportunities for continued public enjoyment. Increased presence of park staff would enhance public awareness of Biscayne National Park, with long-term minor to moderate benefits. Long-term minor to moderate, beneficial effects on visitor health and safety would result from increased staff, additional controls on boating practices, and physical structural and safety improvements to the buildings. Moderate to major, cumulative effect.	Minor to moderate beneficial effects for visitors seeking quiet passive experiences in the Stiltsville area. The removal of the structures would add negligibly to the amount of open water available for visitor use. Improvements to the natural seascape would offer minor to moderate, beneficial effects for those who appreciate natural settings. For those who have used or have been associated with the structures, long-term, adverse effects to their experiences relative to Stiltsville would be moderate to major. Minor, adverse effects would result from the elimination of opportunities for environmental education and opportunities. Beneficial effects on visitor safety would be negligible to minor. Cumulative effects on visitor experience and safety would be negligible to minor.



**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Soundscape	Noise generated from renovation/construction activities and routine maintenance of the structures would have a direct, localized, short-term, minor to moderate adverse effect on the natural soundscape. The noise level generated by public and/or private boating access and use of the structures would have a direct but localized, long-term, minor to moderate adverse effect on the natural soundscape. There would be a negligible, adverse cumulative effect on soundscape.	Same as Alternative A.	Same as Alternative A.	Implementation of Alternative D would have direct, short-term, minor to moderate adverse effects on soundscape in a localized area during demolition activities. After removal of the structures there would be a direct, long-term, minor to moderate, beneficial effect in this localized area because noise associated with boating access and use of the structures would be eliminated. Removal of the structures would have a negligible to minor beneficial cumulative effect on the natural soundscape.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Visual Resources	In the short-term, the renovation of these structures would have direct, negligible to minor adverse effects on the visual resources because of the construction activities. In the long-term, the retention and use of these structures would have a direct and localized, negligible, adverse or beneficial effect, depending on the perception and values of the individual viewing the scene. In the context of the urban/coastal environment that surrounds the bay, the structures would have a negligible or minor adverse cumulative effect on visual resources.	Same as Alternative A.	Same as Alternative A.	In the short-term, the removal of these structures would have direct, negligible to minor adverse effects on the visual resources because of demolition activities. In the long-term, the removal of the structures would have a direct and localized, negligible to minor beneficial or adverse effect, depending on the perception and values of the individual viewing the scene. The cumulative adverse effects of this alternative would be generally considered negligible or minor.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Park Operations	Alternative A would have a direct, long-term, negligible to minor adverse effect on the financial and staffing component of park operations because of the associated development, operation, maintenance, and staffing costs with the possible rehabilitation and use of a structure as a satellite park ranger office/interpretive contact facility. However, if law enforcement were improved under Alternative A, improved visitor/resource protection, public health and safety functions and decreased response time to this northern portion of the park would provide a direct, minor beneficial effect because of the increased long-term National Park Service presence.	Alternative B would have a direct, long-term, moderate adverse effect on National Park Service operations by substantially increasing both the financial and staffing burden on National Park Service operations. This alternative would maximize the National Park Service presence in this heavily used northern portion of the park and would have a direct, long-term moderate beneficial effect, allowing reduced response time for emergencies, improved monitoring for better resource protection needs, and the expansion of law enforcement, visitor protection, and public health and safety functions.	Alternative C would have a direct, long-term minor adverse effect on park operations due to the capital development costs associated with rehabilitation of stilt structures used for National Park Service purposes, increased costs of additional National Park Service staff necessary to monitor users and manage the competitive lease program. However, if law enforcement were improved under Alternative C, improved visitor/resource protection, public health and safety functions and decreased response time to this northern portion of the park would provide a direct, minor beneficial effect because of the increased long-term National Park Service presence.	Removal of the Stiltsville structures would have a direct, long-term moderate beneficial effect on the financial component of National Park Service park operations because this action would eliminate any future need to expend National Park Service funds to renovate or preserve these structures. Likewise, this action would eliminate the need to provide additional staffing to manage any future use that might be considered for these structures. However, there might be a potential direct, short and long-term, moderate adverse effect on law enforcement, visitor/resource protection, and public health and safety park operation functions in this northern portion of the park, if National Park Service were to ignore the need for an increased presence due to the removal of these structures.

**TABLE 5: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)**

<b>Impact Topic</b>	<b>Alternative A: Proposed Action – Non-profit (IRS 501 (c) (3)) Organization Development and Management to Provide for Public Use</b>	<b>Alternative B: National Park Service Development and Management to Provide for Public Use</b>	<b>Alternative C: Competitive Leasing to Provide for Public and Private Use</b>	<b>Alternative D: No Action Alternative - Removal of the Stiltsville Structures</b>
Socioeconomics	Implementing Alternative A would have long-term negligible to minor beneficial effects to the local economy. There would be no adverse or beneficial effects to concessions within the park. The mix of public uses proposed under Alternative A would provide long-term minor socioeconomic benefits by increasing the opportunities for the public, including the economically disadvantaged, to access the structure and gain an appreciation of park resources.	Same as Alternative A.	Alternative C would have long-term, negligible to minor beneficial effects on the local economy. There would be no adverse or beneficial effects to concessions within the park. Alternative C would also provide long-term, negligible socioeconomic benefits from increased opportunities for the public, including the economically disadvantaged, to access the structures.	Removal of the structures would have short-term negligible to minor beneficial effect on local business related to construction activity. Removal of the structures would eliminate the opportunity for public use and educational opportunities to increase public awareness of the history and ecology of the area. This would result in long-term minor adverse socioeconomic effects.

## **AFFECTED ENVIRONMENT**

### **WATER QUALITY**

Stiltsville lies on the eastern edge of the central region of Biscayne Bay, a shallow, subtropical estuary along the southeastern coast of Florida. Biscayne Bay is approximately 428 square miles in area, with a contributing watershed of approximately 938 square miles.

The Biscayne Bay watershed is highly urbanized and includes 16 percent of the state's population in an area that represents less than 2 percent of the land available in the state. South Florida is one of the rapidly growing areas of the country and this is occurring despite the fact that more than a third of the contributing watershed is considered protected wetlands. Land uses and the contaminants they contribute within the area covered by the Biscayne Bay Surface Water Improvement and Management Plan include the following (Mulliken and VanArman 1995):

Urban land occupies 54 percent of the watershed, and includes residential, commercial, industrial, institutional, and transportation uses.

More than 70 percent of this area (38 percent of the total watershed) is used for residential and commercial purposes. Runoff from these land uses contains pesticides, cleaning solutions, solvents, and automotive products.

About 7 percent of the urban area (3.6 percent of the total watershed) supports industrial land uses, landfills, roads, and airports. Industrial and landfill areas contribute metals, organic chemicals, and products from manufacturing. Stormwater runoff from roads is a major source of suspended solids, lead, zinc, gasoline byproducts, and polyaromatic hydrocarbons. Airfields contribute fuels, solvents, oil and grease, metals, nutrients, and pesticides.

Open space represents about 20 percent of urban lands. Runoff from open space typically has low levels of pollutants but can contain fertilizers and pesticides from managed areas such as parks and golf courses. Runoff may also have high levels of sediment from erosion.

Protected wetlands constitute 35 percent of the Surface Water Improvement and Management Plan area.

About 11 percent of the Surface Water Improvement and Management Plan area consists of agricultural lands, rangelands, forests, and barrens. Runoff from agricultural land is an important source of fertilizers and pesticides, as well as sedimentation.

The bay receives fresh water from rainfall, surface water runoff, a series of drainage canals, and ground water seepage. The central region of the bay receives freshwater flows from the Miami River, Tamiami Canal, Comfort Canal, Coral Gables Canal, and the Snapper Creek Canal. Surface water discharges also occur through the G-93 and S-22 structures. The central section of the bay is an area of generally higher salinity that is controlled by flow over the Safety Valve shoals (Mulliken and VanArman 1995).

Water quality degradation affects the ecological communities in and around the bay as well as the health and well being of the local human population. Water quality within Biscayne Bay has been described as ranging from bad to near pristine (Mulliken and VanArman 1995). The majority of the water quality problems in the bay are located in the northern region and are associated with the city of Miami. Surface water runoff from urban land uses has been identified as the major source of contaminants in the bay.

Biscayne Bay has been designated by the state legislature as an Outstanding Florida Water. This state-enforced rule applies to permitted projects and is intended to prevent further water quality degradation. In 1988, Biscayne Bay was identified as a priority water body and therefore eligible for a significant amount of investment for research and restoration projects under the Surface Water Improvement and Management Plan. It is believed that the recent improvements in the water quality in the bay are a result of numerous plan-funded projects that improve the surface water discharges into the bay (Mulliken and VanArman 1995).

The park has conducted water quality monitoring on a regular basis beginning in the mid to late 1980s. Effective in 1991, a total of 12 water quality monitoring stations (7 bay and 5 reef platforms) were established and maintained. Instruments monitor conductivity, temperature, dissolved oxygen, pH and turbidity (reef sites only). The water monitoring program objectives for the park are to: (1) supply information that is useful in the understanding of the cycling of water diurnally, seasonally and annually, and (2) studying the impacts of human influence on such systems so as to be able to better preserve and protect park water clarity, quantity and quality.

Water quality monitoring has been conducted in Biscayne Bay since 1979 by Miami-Dade County Department of Environmental Resources Management, with funding assistance from the south Florida Water Management District. Data are collected from about 100 sampling stations. Monitoring includes physical and meteorological observations, including such features as water depth, water temperature, and air temperature, plus analysis for 22 water quality parameters. Water quality monitoring results are available on the Internet on the U.S. Environmental Protection Agency's STORET site ([http://oaspub.epa.gov/storpubl/station\\_selection](http://oaspub.epa.gov/storpubl/station_selection)).

The Surface Water Improvement and Management Plan update (Mulliken and VanArman 1995) reviews the water quality results throughout Biscayne Bay from this sampling. For the 13-year period (1979 through 1992), the report states:

The results of the trend analysis are interesting, and encouraging. Of 150 statistically significant trends in the data, 78 percent show improvement in water quality. The parameters that showed the most stations with improvement were turbidity, dissolved oxygen, and total coliform bacteria, which are critical factors in ecosystem health and public health. These findings must be interpreted cautiously, but they suggest that efforts to clean up the bay are paying off.

Ten of the Department of Environmental Resources Management water quality monitoring stations monitor water quality around Stiltsville. Data from these sites indicate that water quality in this area has not changed substantially over the last two decades (Blair 2001).

The Stiltsville structures are located on the shoals known as the Safety Valve (see the Location map). Shallow channels through the shoals convey both tidal flows and storm surges. Tides

continually flush the shoals around Stiltsville, and for the most part the water quality is considered very good (Mulliken and VanArman 1995).

The materials used to construct and rehabilitate the Stiltsville structures must be protected from the elements. Typically, this has involved the regular use of marine paint, wood preservatives, and anti-fouling agents. These products usually contain tributyltin and other toxic substances that diffuse into the water and are mildly toxic to birds but highly toxic to aquatic organisms (EXTOXNET 1996). Tributyltin, at very low levels, can cause structural changes, growth retardation, and death in clams, mussels, and oysters at levels between 0.06 and 2.3 µg/L. Tributyltin can cause growth cessation of lobster larvae at concentrations as low as 1.0 µg/L. Tributyltin does not readily dissolve, but binds to the sediments or to particulates in the water column where it may take 1 to 34 weeks to degrade (EXTOXNET 1996).

Boaters access the structures via narrow, shallow, and sometimes, winding channels. When boaters lack adequate navigation skills, are unfamiliar with the access route, or travel at excessive speeds, the boat propellers and hulls can contact the bay bottom. The resulting bottom disturbances can increase water turbidity until currents or settling remove silts from the water column. This activity also re-suspends pollutants that have bonded with the sediments, making them available to aquatic organisms.

The water quality of Biscayne Channel, which accommodates sea-going traffic, is affected by substances accidentally or deliberately released from vessels. These include, but are not limited to, fuels, oil and grease, solvents and cleaners, trash, wash and rinse waters, and both treated and untreated sewage. In addition, the wake from the watercraft stirs up the sediments and increases turbidity. Most of the water quality impacts remain in the channel and only affect the edge of the shoals.

## BIOLOGICAL RESOURCES

The submerged habitats of Biscayne Bay are composed of open-water communities, such as plankton and fishes, and bottom communities, including hard bottom, seagrasses, seagrass-algae, and barren bottom communities with their associated fauna (Mulliken and VanArman 1995). Seagrass areas are of particular importance to many species of fish because mature fish spawn at the seaward edge of bank reefs or in the offshore pelagic regions. The resultant larvae are transported coastward and the larvae and juveniles then inhabit the coastal lagoons and seagrass beds of the barrier islands and near-shore mangrove areas that also serve as a nursery and rearing habitat for juvenile fish (Ault 2001). Seagrass habitat is especially prevalent in Biscayne Bay and the corresponding fauna is well developed, including bonefish (*Albula vulpes*), ladyfish (*Elops saurus*), pompano (*Trachinotus carolinus*), permit (*Trachinotus falcatus*), red drum (*Sciaenops ocellatus*), spotted sea trout (*Cynoscion nebulosus*), silver perch (*Bairdiella chrysoura*), and hogfish (*Lachnolaimus maximus*). Some species may spend the majority of their lives offshore; however, their juvenile life stages are in Biscayne Bay or similar habitats. Seagrass beds also serve as a food source for the endangered West Indian manatee (*Trichechus manatus latirostris*) and as nursery grounds for several species of fish and invertebrates.

### SEAGRASS BEDS

Seagrass beds or meadows have been described in current literature as among the most productive ecosystems in the world (Thayer, *et al.* 1997), due to their importance in the life cycles of most aquatic organisms. Seagrasses support complex food webs by virtue of their physical structure and primary productivity. The seagrass meadows provide shelter from predators, breeding and nursery areas for many commercial and recreational fish, and forage areas for many species, including many listed as endangered. The plants absorb nutrients from coastal and estuarine systems, stabilize substrates, and minimize the effects of wave action (Short *et al.* 1995).

The seagrasses in Biscayne Bay cover approximately 72,000 acres, approximately 42 percent of the total park area (Battle 1997). The Seagrass Beds map provides an aerial view of the coverage of the seagrass beds within the vicinity of Stiltsville. Historically, the extent of seagrass cover was reduced by anthropogenic impacts, especially in the northern regions of the bay. Large dredge and fill projects, some commercial fishing methods, watercraft propeller scarring and groundings, and other direct physical impacts have had the greatest impact on the loss of seagrass. Indirect impacts such as water quality degradation, increased turbidity, changes in salinity, and cultural eutrophication have also caused seagrasses to decline. Regulations requiring the treatment of point and non-point source discharges have resulted in significant improvements to water quality and clarity, reducing these effects as the primary impacts on seagrass. With the increasing population in south Florida and the increasing popularity of pleasure boats, the primary direct impacts to seagrasses now are those caused by watercraft groundings and scarring by watercraft propellers (Sargent *et al.* 1995). Indirect adverse effects occur from localized turbidity and sedimentation that result from bottom disturbances by boats (Canzanelli 2001).

Propeller scarring takes place when boats traverse water too shallow for the drafts of the boats. The Seagrass Beds map depicts the seagrass scarring within the bay. The propellers cut and pull at the grasses and the sediments, leaving unvegetated furrows. These scars tend to widen over time due to erosion of the unprotected sediments by wave action. Repeated scarring can ultimately lead to completely denuded substrates and the subsequent loss of habitat and



degradation of water quality. Propeller scars are especially damaging in areas like the Safety Valve shoals where the strong currents regularly disturb open sediments, causing a scouring effect that prevents recolonizing of even pioneer species (Smith 1993).

Groundings are even more severe impacts to seagrass beds. In these cases, a boater runs aground in the shallow water and tries to get free by force. The engines of large boats can leave blowouts in the substrate and suspend enough sediment to create water quality impacts in areas substantially outside the perimeter of the physical impacts. These areas are slow or impossible to recolonize, and restoration efforts have met with mixed results.

Research has shown that each species of seagrass has physiological and structural differences that affect its growth and tolerance for stress, and therefore each species has a different ability to recover from scarring. Some seagrasses are characterized by weakly differentiated rhizomes for vertical growth and are more vulnerable to becoming buried by mobile sediments. However, these species have the ability to spread more quickly because of their shallow rhizome system and a greater ability for lateral branching. Shoal grass (*Halodule wrightii*) is characterized as this type of seagrass. Turtle grass (*Thalassia testudinum*) has a deeper rhizome and grows faster vertically. It therefore can withstand some sedimentation, but spreads slowly (Sargent *et al.* 1995).

Recovery of seagrass beds depends on many factors. Variables such as sediment condition, water quality, scar depth, water depth, bottom profile, current, and wave energy can significantly affect the speed of recovery. Several studies have determined that moderately scarred beds of turtle grass may take between three and five years to recover, or longer if the impacts are repeated (Sargent *et al.* 1995). In Biscayne National Park approximately 200 recorded vessel groundings occur each year. Additional vessel groundings are known to occur as detected by scarification to seagrass and coral communities, but are not reported, so consequently go unrecorded as there is no responsible party to identify. Many of the unrecorded vessel groundings occur within the Stiltsville area.

The seagrass meadows surrounding the shoals of Stiltsville are predominantly vegetated with turtle grass, the less abundant but equally important manatee grass (*Syringodium filiforme*), and shoal grass. The seagrasses appear as monocultures, mixtures of the three grass species, or associated with algae (Mulliken and VanArman 1995). The fragile seagrass communities are widely recognized for their importance to marine and estuarine ecosystems and are monitored worldwide as water quality indicators (Myers and Ewel 1990). The seagrasses in Biscayne Bay were monitored by the Florida Marine Research Institute as part of a statewide program to assess the scarring (Sargent *et al.* 1995). This information was updated in 1999 and is the source of the Seagrass Beds map showing the distribution of seagrass communities occurring within Biscayne National Park.

## AQUAFAUNA

*Plankton:* Plankton consists of free-floating plant (phytoplankton) or animal (zooplankton) organisms that drift in the water column. These organisms play significant roles in the food web of Biscayne Bay (Mulliken and VanArman 1995). The dominant phytoplankton class in Biscayne Bay is coccoid cells (Mulliken and VanArman 1995), which depend on phosphorus as their primary nutrient for individual growth. Zooplankton consists of organisms ranging from microscopic protozoans to jellyfish, including larval and early stages of invertebrates and fish.

*Invertebrates:* Biscayne Bay is host to over 800 invertebrate species (Mulliken and VanArman 1995). The most recognized groups include shellfish such as shrimp, crabs, and lobsters. Members of these groups include the blue crab family (Portunidae, species of *Portunus* and *Callinectes*), spiny lobster (*Panulirus argus*), and shrimp (*Penaeus* spp.). Other invertebrate classes found in Biscayne Bay include annelid worms (Polychaeta), crustaceans (Crustacea), chitons (Amphineura), snails and slugs (Gastropoda), mussels, scallops, and oysters (Pteriomorphia), and echinoderms (Echinoidea, Holothuroidea, and Ophiuroidea).

During the early and mid-1900s, Biscayne Bay had a thriving commercial sponge industry. In 1991, in an effort to protect the sponge populations, the bay was officially closed to sponge harvesting, and it has never been reopened.

*Fish:* The waters of the Biscayne National Park serve as a nursery area for larvae and juveniles of a wide variety of fish (Ault 2001). Many species of these early development stage fish live and reproduce in the adjacent barrier coral reef and other offshore habitats as adults.

Biscayne Bay is a transition area for the fishes of eastern Florida, with a population of tropical and temperate water fishes (Mulliken and VanArman 1995). Examples of fish species identified in the Biscayne National Park include, but are not limited to: barracuda (*Sphyraena barracuda*), hogfish (*Lachnolaimus maximus*), gray snapper (*Lutjanus griseus*), goliath grouper (*Epinephelus itajara*), tarpon (*Megalops atlanticus*), snook (*Centropomus* spp.), as well as many members of fish families such as snappers (Lutjanidae), groupers (Serranidae), grunts (Haemulidae), spadefish (Ephippidae), surgeonfish (Acanthuridae), triggerfish (Balistidae), parrotfish (*Scaridae*), and jacks (Carangidae) (Ault 2001). Studies have identified at least 512 fish species in Biscayne Bay (Mulliken and VanArman 1995).

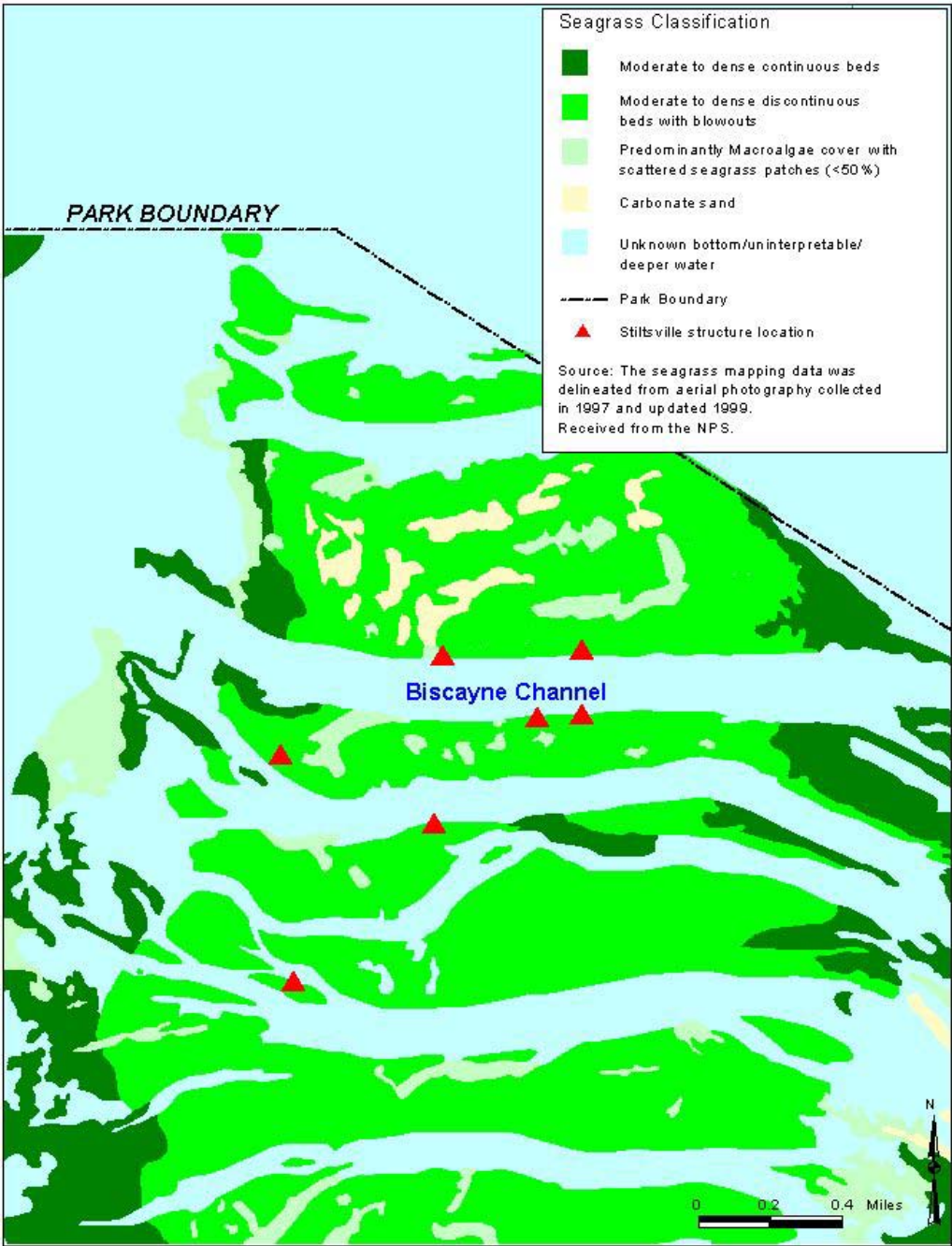
*Marine Mammals:* The West Indian manatee, also known as the Florida manatee, and the bottlenose dolphin (*Tursiops truncatus*) commonly forage in the Biscayne Bay. The West Indian manatee, a federally listed endangered species, is addressed in detail in the “Endangered or Threatened Species” section. The bottlenose dolphin is common in the inshore waters throughout the state of Florida. In the Biscayne National Park, bottlenose dolphins commonly forage in open waters, feeding on various fish species (i.e., mullet (*Mugil* spp.)). While overall species recovery has been promoted by federal protection, dolphins have not recovered to their original numbers in Biscayne Bay (Metro-Dade County Planning Department 1986). Additionally, the western Atlantic bottlenose dolphin population incurred massive population declines resulting from a large die-off in 1987-88 (Mulliken and VanArman 1995, NOAA – Office of Protected Resources).

*Reptiles:* Various sea turtles may be found in the Stiltsville area. These species include the Atlantic green turtle (*Chelonia mydas mydas*), the Atlantic hawksbill turtle (*Erectmochelys imbricata*), the leatherback turtle (*Dermochelys coriacea*), the Atlantic ridley turtle (*Lepidochelys kempfi*), and the loggerhead turtle (*Caretta caretta*). Sea turtles are protected, and detailed descriptions are located in the “Endangered or Threatened Species” section of this document.

## AVIFAUNA

The birds of Biscayne National Park are among the most noticeable of Biscayne Bay’s wildlife (Mulliken and VanArman 1995). Biscayne National Park is home to numerous permanent

SEAGRASS BEDS





resident species, migratory species, and various species that are winter or summer residents. Avifaunal species found in the Stiltsville region of Biscayne National Park primarily use the bay and the stilt-structures for foraging, resting, and roosting. The existing stilt-structures do not provide optimal nesting habitat.

Bird species found in the Stiltsville region of Biscayne National Park include, but are not limited to: double-crested cormorants (*Phalacrocorax auritus*), mergansers (*Mergus* spp.), various diving ducks (subfamily Aythyinae), American white pelicans (*Pelicanus erythrorhynchos*), brown pelicans (*Pelicanus occidentalis*), ospreys (*Pandion haliaetus*), terns (subfamily Sterninae), belted kingfishers (*Ceryle alcyon*), black skimmers (*Rynchops nigra*), bald eagles (*Haliaeetus leucocephalus*), magnificent frigatebirds (*Fregata magnificens*), gulls (*Larus* spp.), herons (family Ardeidae), roseate spoonbills (*Ajaia ajaja*), white ibis (*Eudocimus albus*), glossy ibis (*Plegadis falcinellus*), oystercatchers (*Haematopus palliatus*), grackles (*Quiscalus* spp.), rails (*Rallus* sp. and *Coturnicops* sp.), hawks (*Buteo* spp. and *Accipiter* spp.), and falcons (*Falco* spp.).

## ARTIFICIAL HABITAT COMMUNITIES

*Coral, Sponge, and Algal Communities:* The Stiltsville structures themselves serve as an artificial habitat area for various sessile organisms (sponges, algae, and hard and soft coral). The concrete and wooden support pilings associated with the stilt-structures and the bare mudflats created under the structures provide substrate for various algae, sponge, and coral species not normally associated with a seagrass community (Curry, Science Coordinator, pers. com).

Algal, sponge, and coral species observed on the support pilings, under the structures themselves, and on mudflat footprints of former structures include green algae (*Penicillus* sp. and *Halimeda* sp.), massive star coral (*Siderastrea siderea*), lesser star coral (*Siderastrea radians*), encrusting fire coral (*Millepora alcicornis*), elliptical star coral (*Dichocoenia stokesii*), golf ball coral (*Favia fragum*), mustard hill coral (*Porites astreoides*), finger coral (*Porites porites*), diffuse ivory bush coral (*Oculina diffusa*), hidden cup coral (*Phyllangia americana*), symmetrical brain coral (*Diploria strigosa*), ten ray star coral (*Madracis decactis*), and boulder brain coral (*Colpophyllia natans*) (Patterson 2000).

## ENDANGERED OR THREATENED SPECIES

The seagrass meadows around Stiltsville are important to the life history of numerous species considered endangered, threatened or of special concern. These species include the Atlantic green turtle, the Atlantic hawksbill turtle, the leatherback turtle, the Atlantic ridley turtle, the loggerhead turtle, and the West Indian manatee. Avian species that may forage around the structures or use the structures as roosting or perching areas include the brown pelican, bald eagle, Arctic peregrine falcon, least tern, and American oystercatcher. At low tide, wading birds such as the reddish egret, little blue heron, white ibis, and roseate spoonbill can be observed foraging in the shallow water surrounding Stiltsville. Shorebirds such as piping plover may also be observed foraging in the mud flats at low tide.

Currently, none of the fishes inhabiting the Biscayne National Park are listed on the state of Florida or federal threatened and endangered species list. However, the listing of marine fish has historically been a low priority and only recently have marine fish species been proposed for inclusion on national and international rare or endangered animal lists (Ault 2001). The National Marine Fisheries Service has classified Biscayne Bay, including Biscayne National Park, as essential fish habitat. The “Ecologically Critical Areas” section of this document discusses in detail essential fish habitat.

Table 6 lists the species that may be found in the vicinity of the structures, their scientific name, and their protection status with state and federal agencies.

The endangered seagrass *Halophila johnsonii* is reportedly found in the northern portions of Biscayne Bay near Virginia Key north of the park (NMF 2001). To date, there are no records of it occurring in the vicinity of Stiltsville.

Impacts that lead to the decline of the seagrasses in the vicinity of Stiltsville directly and indirectly affect all of the animals listed in the table. Other indirect impacts may occur as a result of human activity in the Stiltsville area. For example, loud boat watercraft engines or generators may startle fish and avifauna. The “Biological Resources” section discusses in detail sound impacts to wildlife. Swimming, diving, and throwing trash off the structures may disturb the substrate and cause increases in turbidity. Other impacts to protected species may occur as a result of direct physical contact. The protected species that may be the most directly affected by activities related to Stiltsville are the West Indian manatee and the five species of sea turtles.

*West Indian manatee:* A 2000 census of the West Indian manatee in Florida determined that there are only between 900 and 1000 within the waters of the east coast, and most of these are found in Brevard County. Although the census indicated that there are more manatees in Florida than originally thought, they are still dying in record numbers. The largest source of human-related manatee mortality is collisions with watercraft. Many living manatees exhibit scarring or wounds from watercraft propellers. A recent analysis of injuries to 406 manatees killed by watercraft and recovered between 1979 and 1991 indicated that 39 percent died from propeller cuts, 55 percent from impact with boat watercraft hulls, and 4 percent from both. The analysis determined that most of the propeller wounds were from medium to large boats, but the impact wounds were from fast-moving small or medium boats. Between 1986 and 2000, an average of 29 percent of all manatee deaths were caused by boat watercraft hull impacts or propellers.

**TABLE 6: ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES  
PRESENT OR POTENTIALLY PRESENT IN THE VICINITY OF STILTSVILLE<sup>a/</sup>**

Common Name	Scientific Name	Observed	State Status <sup>b/</sup>	Federal Status <sup>b/</sup>
Roseate spoonbill	<i>Ajaia ajaja</i>	X	SSC	
Loggerhead sea turtle	<i>Caretta caretta</i>	X	T	T
Piping plover	<i>Charadrius melodus</i>	X	T	T
Atlantic green turtle	<i>Chelonia mydas mydas</i>	X	E	E
Leatherback sea turtle	<i>Dermochelys coriacea</i>	X	E	E
Little blue heron	<i>Egretta caerulea</i>	X	SSC	
Reddish egret	<i>Egretta rufescens</i>	X	SSC	
Snowy egret	<i>Egretta thula</i>	X	SSC	
Atlantic hawksbill sea turtle	<i>Erectmochelys imbricata</i>	X	E	E
White ibis	<i>Eudocimus albus</i>	X	SSC	
Arctic peregrine falcon	<i>Falco peregrinus tundris</i>	X	E	E
American oystercatcher	<i>Haematopus palliatus</i>	X	SSC	
Bald eagle	<i>Haliaeetus leucocephalus</i>	X	T	T
Kemp's ridley sea turtle	<i>Lepidochelys kemp</i>	X	E	E
Brown pelican	<i>Pelecanus occidentalis</i>	X	SSC	
Black skimmer	<i>Pynchops niger</i>	X	SSC	
Least tern	<i>Sterna antillarum</i>	X	T	
West Indian manatee	<i>Trichechus manatus latirostris</i>	X	E	E

a/ Sources: National Park Service 1978; Mulliken and VanArman 1995; park staff, personal communication.

b/ E = endangered; T = threatened; SSC = special concern; X = present.

Manatees prefer grazing on seagrass in shallow water adjacent to deep channels, similar to the habitat provided in Stiltsville (U.S. Fish and Wildlife Service 1993). Seagrasses are their favorite food, and they generally graze on the leaves of the grasses, leaving the roots intact. Manatees consume approximately 4 to 9 percent of their body weight daily, which requires about five continuous hours of grazing. Although they prefer seagrasses, manatees will eat virtually all forms of aquatic macrophytes, some algae, and occasionally fish (Smith 1993).

Manatees have been known to migrate as far north as the coast of Virginia in the summer, but return to the warm waters of southern Florida in the winter. Cold weather can kill manatees if they are unable to reach warm-water havens. A severe cold snap in 1996 is blamed for at least 118 mortalities. Manatees are often seen congregating in large groups in warm, spring-fed estuaries and bays and around power plant thermal effluent discharges.

*Sea turtles:* Sea turtles are among the largest living reptiles. They have scales and a bony shell, are cold-blooded and long-lived, and lay their eggs on land. Sea turtle populations have been in a steady decline, predominantly due to disturbance of nests, loss of nesting habitat, and commercial fishing. Other human-related impacts to sea turtles include the accidental ingestion of marine debris (such as plastic, tar balls, balloons, and fishing line), water quality degradation, and

collisions with boat hulls and propellers. Banning the harvest of sea turtles for food, enforcing the use of turtle excluder devices (TEDs) on shrimp boats, and preserving some nesting beaches appear to have stabilized some species. Accurate estimates of sea turtle populations are difficult to make due to their expansive range and motility. Of the five species listed in the above table, only the loggerhead, green turtle, and leatherback have been seen with any regularity in the vicinity of Stiltsville. The hawksbill turtle is usually associated with coral reef areas, and the Kemp's ridley is extremely rare. The adult green sea turtle is herbivorous, while the other species are either carnivorous or omnivorous. Green sea turtles are observed occasionally foraging on the seagrass beds around Stiltsville, while the other species forage on the myriad of fish and crustaceans that occur in these highly productive areas.

*Birds:* Bird species known to occur within the vicinity of Stiltsville fall into two categories – those that would be there whether Stiltsville existed or not, and those opportunistic species that take advantage of the artificial habitat provided by the structures. A discussion of the artificial attractant that the structures provide for some avifaunal species is provided in the “Biological Resources” section of this document.

Birds that would occur in the vicinity of Stiltsville regardless of the structures include wading birds and shorebirds. Wading birds are often observed in the vicinity of Stiltsville, foraging in depressions in the mudflats at low tide (Biscayne National Park staff, personal conversation). These birds include white ibis, roseate spoonbill, snowy egret, reddish egret, and little blue heron. Other birds that would normally occur in the vicinity are the black skimmer, piping plover, American oystercatcher, brown pelican, and least tern. These birds typically forage in near-shore habitats such as bays and estuaries.

Birds that have been observed using the structures in Stiltsville opportunistically include the bald eagle and the peregrine falcon. These two raptors have been observed taking smaller birds that stop to roost on the structures.



## **ECOLOGICALLY CRITICAL AREAS**

The Council on Environmental Quality guidelines (CEQ 1978) for implementing the National Environmental Policy Act requires an analysis of resources that would be considered ecologically critical areas. Within the Stiltsville area, ecologically critical areas include:

Essential fish habitat, as identified by the South Atlantic Fishery Management Council (SAFMC 1998); and

Habitat area of particular concern, as defined by the National Oceanic and Atmospheric Administration (1999) and mapped by the South Atlantic Fishery Management Council.

Fish habitat or the geographic area where the species occur at any time during its life, can be described by ecological characteristics, location, and time. Essential fish habitat includes waters and substrates that focus distribution; for example, coral reefs, marshes, or submerged aquatic vegetation, and other less distinct characteristics such as turbidity zones, salinity gradients, and water quality variation. Habitat use may change or shift over time due to climatic change, human activities and impacts, and/or other factors such as change with life history stage, species abundance, competition from other species, and environmental variability in time and space. The type of habitat available, its attributes, and its functions are important to species productivity, diversity, health, and survival (NMFS 1998 – Final Recommendations to Essential Fish Habitat).

The National Marine Fisheries Service has identified Biscayne Bay, including Biscayne National Park, as an essential fish habitat. Biscayne Bay also has been geographically defined as a habitat area of particular concern in Fishery Management Plan Amendments of the Gulf of Mexico, South Atlantic, and Caribbean Fishery Management Plans (NOAA 1999).

The South Atlantic Fishery Management Council has designated Biscayne Bay as a habitat area of particular concern for several species or species groups included in its jurisdiction. These include penaeid shrimp unit, red drum, snapper-grouper unit, spiny lobster, and live/hard bottom habitat. Coral and coral reefs are also designated within this unit, although very little coral occurs within the bay.

Biscayne Bay is characterized as an estuarine essential fish habitat. Estuarine is defined by National Oceanic and Atmospheric Administration as those waters, substrates, and associated biological communities within bays and estuaries of the Exclusive Economic Zone, from mean high water level (the high tide line), or the extent of upriver saltwater intrusion to the respective outer boundaries for each bay or estuary as defined in 33 CFR 80.1 (United States Coast Guard Lines of Demarcation).

The benthic habitats found in the Stiltsville area include seagrass beds and bare-bottom habitats and are described in detail in the “Biological Resources” section.

Appendix E lists species that have been observed or recorded in various databases as present in Biscayne Bay, species that are potentially located within the project area, or species that have prey items that are found in the project area (Ault 2001, Mulliken and VanArman 1995, Biscayne National Park – General Management Plan 1978 & 1983, and Biscayne National Park undated reports). The species listed in the appendix are listed in Fishery Management Plans and therefore are included in essential fish habitat designations by the South Atlantic Fishery Management

#### AFFECTED ENVIRONMENT

Council. Biscayne National Park, including the Stiltsville region, has been identified as essential fish habitat for various species.

## **CULTURAL RESOURCES**

The cultural resources within the vicinity of Stiltsville and a one-mile radius were evaluated for potential impacts. Cultural resources include historic resources, such as submerged archeological prehistoric and historic sites. There are no known submerged, prehistoric archeological sites identified around Stiltsville, and no traditional cultural properties have been identified in the Stiltsville area. The Keeper of the National Register denied a request from the State Historic Preservation Officer for addition of Stiltsville to the National Register of Historic Places, determining that Stiltsville does not meet the definition of a traditional cultural property. In addition, no cultural landscapes have been formally identified for the area, although some individuals in the local community deem the structures to be an important part of the viewshed (see “Visual Resources”). Museum collections are also a cultural resource, but there are no collections from within the project area or its general vicinity. Based on the above information, cultural landscapes, ethnographic resources, and collections will not be discussed further.

The lands and submerged bottomlands of Biscayne National Park are rich with archeological remains that represent the cultural history of southern Florida and the Florida Keys. Limited archeological surveys have revealed an abundance of shipwrecks and other historic maritime activity areas, Native American sites, and the remains of pioneer settlements. Over 100 archeological sites located within the park demonstrate the area's long-time international maritime heritage. Many of the park's cultural resources that are on the National Register of Historic Places are located within historic sites and districts.

Many of the local histories of Miami, southeast Florida, and the Florida Keys tend to overlook the islands and region represented by Biscayne National Park. However, the park's 42 islands, the northernmost extension of the Florida Keys, have not been subjected to the same level of development as the keys to their south. Due to restrictions after the park's formation in 1968, the park's keys are basically unaltered since their limited early 20th-century historic development, holding the archeological and historical evidence of earlier periods through modern times. Archeological and historical sites, long ago destroyed by industrial sprawl and residential development on the mainland and islands to the north and south of the park, can still be found in the keys and waters of Biscayne National Park.

## **HISTORIC RESOURCES**

Two attempts have been made to have Stiltsville placed on the National Register of Historic Places, with the latest occurring in October 1999. In a letter dated that month, the Keeper of the National Register stated, “Stiltsville does not meet the definition of a traditional cultural property.” The letter, included as Appendix F, further states that Stiltsville does not meet National Register standards for exceptional historical or architectural importance required of structures built within the last 50 years; all of the current structures have been constructed after 1960. Although none of the remaining structures are survivors of Stiltsville's beginnings, the denial of the designation for the National Register does not negate its colorful past or local historical importance.

## **ARCHEOLOGICAL SUBMERGED SITES**

### **Prehistoric Period**

Located some distance south of Stiltsville is the earliest prehistoric site found within the park, a midden marking the intensive settlement that began around 1,000 years ago. The site of a major Tequesta village, occupied over 1,000 years ago, lies north of Stiltsville. The Tequesta archeological sites found within the park could have been fishing and hunting camps used by the Tequesta that lived in this village. What are now referred to as Biscayne Bay and the Miami River was the Tequesta highway for trade, communication, and the source of maritime resources, not very different from today's cultural use of the area. West of Stiltsville, adjacent to the park, is the 10,000-year old Cutler Fossil site. A similar site is located to the south. The proximity of these sites to the Park, coupled with the fact that Biscayne Bay was inundated approximately 4,000 years ago, suggests that Biscayne National Park has the potential for even earlier submerged archeological sites than presently identified. All the Tequesta archeological sites located within and around Biscayne National Park appear to be contemporaneous, indicating that there was substantial human activity in the area prior to the contact period.

### **HISTORIC PERIOD**

The earliest positively identified submerged site in Biscayne National Park is from the mid-18th century. Since early European exploration of this region began in the early 16th century, it is feasible that submerged maritime archeological remains could be found that pre-date this site.

The natural channels through the sand bars to the south of Key Biscayne were once the only routes into northern Biscayne Bay and what is now the Miami Harbor area. Nautical charts from the late 19th century show marked natural channels through these sandbars, referred to as the "bars at the entrance of the bay." Prior to the early 20th century dredging of Government Cut, a deep water navigation channel leading to the port of Miami, the bars at the bay's entrance posed a serious hazard for ships entering the area, which increased as ships increased in size. By the 1920s major shipping traffic was diverted to the newly constructed Government Cut, away from the area that later became Stiltsville. A review of newspaper accounts from the turn of the 19th century up through the building of Government Cut Channel reveals numerous instances of major ship groundings in this area.

The remains of a shipwreck in the Stiltsville vicinity are believed to be a 75-foot wooden barge, now referred to as the Biscayne Channel Barge site. The barge remained in the same location until moved by Hurricane Andrew. Apparently the site is still relatively intact despite the disturbance, and the Barge site has been officially classified as an archeological site.

Hurricane Andrew destroyed 7 of the 14 structures in Stiltsville and damaged the remaining seven. A 1993 hydrographic survey was conducted within the periphery of the Stiltsville structures. The purpose of the survey was to locate post-Hurricane Andrew debris from the structures for removal before they posed a navigation hazard. The survey also attempted to identify any additional submerged cultural resources exposed by the storm, but results did not produce any evidence of significant submerged cultural resources in the vicinity.

## **VISITOR USE AND EXPERIENCE AND VISITOR SAFETY**

Biscayne National Park is open to the public year-round. Annual visitation approaches 500,000 visits, increasing by 30 percent between 1996 and 2001 (National Park Service 2001c). The heaviest visitation occurs during the summer months when the ocean waters are warm and seas are calm. Windy conditions, more common in the dry winter months, allow freedom from insect annoyance and greater comfort when exploring the islands of the park (National Park Service 2000). Accommodations and/or concessions for park activities can be found at many locations along the shores of south Biscayne Bay, including the park's main visitor contact area at Convoy Point and waterfront parks such as Black Point Marina in Cutler Ridge and marinas in South Miami, Homestead and Key Largo.

Biscayne National Park is one of a unique group of public parks in this region established to protect and preserve portions of the only living coral reef in the continental United States. Biscayne National Park provides outstanding opportunities for visitors to learn about this and other important resources of the marine environment. Thirty miles to the south, at Key Largo, is John Pennnekamp Coral Reef State Park – the first undersea park in the United States. These parks, together with 10 other state parks stretching southward through the Florida Keys, protect vital coral reef habitat resources (State of Florida 2000).

Most users are day use visitors who pursue a variety of activities in dispersed locations. Due to the nature of the park and its resources, most visitors experience the park by boat. Common activities pursued within the park include:

- Fishing,
- Snorkeling and scuba diving,
- Water skiing, windsurfing and boating, and
- Camping and overnight stays in private boats.

Organized activities sponsored by the park and associated concessioners include:

- Glass bottom boat trips for coral reef viewing (Atlantic side of barrier islands),
- Snorkeling and scuba diving trips,
- Canoe and kayak rentals, and
- A variety of Ranger's Choice Programs offering education and information in an informal setting.

Special programs highlight spiny lobster seminars during lobster season, coastal cleanup activities, storytelling, and boat safety and maintenance (National Park Service 2000).

Most use of the park takes place in and on the waters of the park. The park maintains a 66-slip harbor at Elliott Key, where boaters may spend the day or night. Boaters may also tie up at Boca Chita Key's harbor. Anchorage can be found off Elliott and Sands Keys. All of these facilities can

provide access to Biscayne National Park and the Stiltsville structures (National Park Service 2000).

Annual boat launch estimates for nearby county facilities were provided by marina staff. A summary is provided in Table 7.

**TABLE 7: ANNUAL BOAT LAUNCH ESTIMATES**

<b>Marina</b>	<b>Estimated Usage</b>	<b>Reference</b>
Black Point Marina, Cutler Ridge	24,000 + annually	K. Hayes, pers. comm.
Crandon Park Marina, Key Biscayne	12,000 + annually	J. Travieso, pers. comm.
Homestead Bayfront Park, adjacent to visitor center	14,000 + annually	D. Winston, pers. comm.
Matheson Hammock Marina, South Miami	12,000 + annually	J. West, pers. comm.

These estimates are probably low and do not reflect boating use originating from other access points to the coastal waters north of the Miami area and in the keys to the south. Boating is an important recreational activity for many south Florida and Miami-area residents; boater registrations within Dade County alone totaled 55,660 in 2001 (Speights 2002).

Park staff noted that when asked, the majority of visitors do not know they are within national park boundaries. This is due in part to the difficulty of marking the boundaries of the park in open water. It is also due to the limited number of park staff that can be present in the northern portion of the park and the resulting limited amount of contact National Park Service rangers can make with the public.

Visitation to the Stiltsville site is difficult to estimate. Under the previous leases, the structures were used for individual and family activities, small group gatherings, and large social functions. Former leaseholders would also host activities for various local non-profit organizations, including Rotary Club, Boy and Girl Scouts and the Optimist Club. Estimated annual usage is about 1000 visitors per house, with up to 10,000 for the entire site (A. Baldwin, pers. comm.). The structures were used primarily on weekends by groups of 10 to 50 people at one time. On special weekends and holidays, gatherings of up to 200 people in a single structure have been reported, and as many as 50 boats have been reported moored to a single structure. Such events would occur several times each year. Boat groundings and unsafe visitor behavior were often associated with larger gatherings (letter to National Park Service).

Biscayne Channel, a main passage from Biscayne Bay to the open Atlantic, transects Stiltsville. All boat traffic from Matheson Park to Dinner Key in Miami uses this channel to go to the ocean, whether to fish, cruise, or visit the Bahamas. Many visitors who use the Stiltsville area, other than leaseholders, anchor on the sandbars. Unauthorized use of the bottom docks of the structures sometimes occurs when leaseholders are absent.

Environmental education is an important element of the south Florida school curriculum, affecting the nearly 375,000 students enrolled in the school district. The National Park Service is active in providing and cooperating in opportunities for such education within the park and in the local school system.

The importance that the district places on environmental education is reflected by the Biscayne Nature Center for Environmental Education and by the Maritime and Science Technology High School. The Biscayne Nature Center was established by the district in 1971 to provide instructional programs that foster an awareness and appreciation of the natural world and promote an understanding of ecological concepts. Programs emphasize south Florida's special geologic features, natural resources, and habitats. The center encourages students to develop a sense of stewardship and to live harmoniously with vital native communities.

The center's programs feature one to two days of field investigations in the center's National Environmental Study Area located within Miami-Dade's Crandon Park on Key Biscayne. Teachers instruct approximately 120 students per day in hands-on environmental studies and observations within the center's varied ecosystems. Each year the center serves more than 10,000 students.

The Maritime and Science Technology High School (MAST Academy) within the Dade County school district is a nationally recognized U. S. Department of Education New American High School Showcase Site and Blue Ribbon School of Excellence with an innovative marine theme. The school is designed for 550 students in grades 9-12. MAST students use state-of-the-art technology and real-world laboratory equipment to experience hands-on learning in a curriculum focused on science and environmental education.

In 2001 the MAST Academy, the Ransom Everglades School, and the University of Miami's Rosensteil School of Marine and Atmospheric Science presented a proposal to the National Park Service and the Stiltsville Committee of the National Park System Advisory Board to establish a base for research and education at Stiltsville. That proposal is presented in Appendix D.

## **SOUND ENVIRONMENT/SOUNDSCAPE**

Sound environment (soundscape) includes existing and potential sources of natural sound, including potential sources of interference (noise) to natural sounds in the park. Soundscape may include both mechanical and natural sounds that may vary in character from day to night, and from season to season. Natural soundscape is created by natural processes, including but not limited to sound created by biological and physical components such as wind, flowing water, wave action, mammals, birds, and insects. Natural ambient sound is the natural soundscape condition that exists in the park in the absence of any human-produced noise. Sound affects on the flora and fauna of Stiltsville are discussed in detail in the “Biological Resources” section of this document.

The definition of noise for this analysis is any undesirable sound that interferes with speech communication and hearing, or is otherwise annoying (unwanted sound). Under certain conditions, noise may have a direct adverse effect on human health by causing hearing loss. Noise may also have an indirect effect by interfering with visitor activities or the quality of the visitor experience. Noise levels usually change continuously during the day, and exhibit daily, weekly, and yearly patterns.

Biscayne National Park is preparing a soundscape management plan. Currently this plan is in the early phase of development. Specific goals and objectives for soundscape protection and noise management will complement the existing management philosophy for resource and visitor activities in each of the management zones. Soundscape management goals for Stiltsville include:

Compliance with soundscape objectives identified in the 1983 general management plan (i.e., the soundscape at Stiltsville would be commensurate with expectations associated with a maritime national park experience).

Protection of soundscape values at Biscayne National Park by eliminating or reducing noise intrusions inconsistent with the park’s mission.

Reduction of noise produced by Biscayne National Park operations and concessions activities, such as noise from VHF radios, generators, and mechanized equipment.

Many Biscayne National Park visitors come to enjoy the natural beauty and serenity of Biscayne Bay, including its soundscapes. Stiltsville’s soundscape includes the terrestrial and ambient air soundscape and the submerged, aquatic sound environments. Visitors to Biscayne National Park experience this natural sound resource by listening to breaking waves splashing under the structures, diving pelicans splashing into the water, thunderstorms and sea breezes rushing across the bay. Intermingled with these natural soundscapes are the sounds of maritime activities that add a human dimension to this terrestrial and aquatic landscape.

A range of noise-producing activities are associated with the use of Stiltsville. Noise from power boats (access and recreation), social events (gatherings of 10 or more people and music), generators, and routine maintenance activities contribute to the soundscape of this northern portion of the park. Stiltsville has always been a place for social activities and parties (see Stiltsville history). Many visitors accept the traditional use and social occasions of the Stiltsville



structures as a way of life in Biscayne Bay, while others consider the noise from such social activity as a disruption to the natural soundscape.

Biscayne Channel is a principal route for recreational watercraft accessing open water. Four of the Stiltsville structures are directly on Biscayne Channel. Over 50 boats pass through Biscayne Channel on an average weekday, with about twice that number daily on weekends. On holiday or party weekends, several hundred boats may traverse the channel daily.

## **VISUAL RESOURCES**

To some people, the remaining seven Stiltsville structures intrude on the continuous natural viewscape where they expect an uninterrupted expanse of ocean and blue skies. To others the structures are an integral part of the Miami and Biscayne Bay skyline, part and parcel of the area's regional history, representing a visual fantasy of escape from our terrestrial way of life. Throughout their 60-year tenure, these structures have maintained an idiosyncratic form juxtaposed on the visual horizon of this urban/coastal environment.

Visual resources are the physical features that makeup the visible landscape, including land, water, vegetation, and man-made features such as buildings, roadways and structures. These visual resources create and affect the aesthetic quality of the human environment. From these structures looking out over the bay, the visual resources comprise Biscayne Bay and coral islands within the park, creating a visual expanse of water, islands, and an unbroken vista of sea and sky. From the structures, looking landward, the view comprises the Miami skyline of skyscrapers, causeways, and seaports. From the mainland, the Stiltsville wooden structures, balanced precariously on what look like sticks, seem out of place in the midst of this modern urban setting, suggesting a time past.

## PARK OPERATIONS

The superintendent at Biscayne National Park is responsible for the full scope of managing the park, its staff, all its programs, and its relations with persons, agencies, and organizations interested in the park. Park staff provide the full scope of functions and activities to accomplish management objectives and meet requirements in law enforcement, emergency services, public health and safety, science, resource protection and management, visitor services, interpretation and education, community services, utilities, housing, fee collection, and management support.

Biscayne National Park management and operations are organized into the seven divisions listed in Table 8. As shown in the table, the park typically has a staff of approximately 55 people. Brief descriptions of the responsibilities of each division are included in the table.

**TABLE 8: TYPICAL STAFFING OF BISCAYNE NATIONAL PARK**

<b>Division</b>	<b>Typical Staffing Levels</b>	<b>Responsibilities</b>
Resource and visitor protection	10	Emergency response, law enforcement, boat grounding response, boating safety
Interpretation	10	Staff visitors' centers, conduct public outreach programs and education programs
Resource management	10	Manage natural resources within the park, respond to boat groundings
Administration	10	Perform administrative duties
Science	2 to 3	Coordinate and conduct research projects within the park, provide liaison with non-National Park Service researchers
Superintendent's office	2 to 3	Supervise park operations
Maintenance	10	Maintain and clean the park grounds, facilities, and equipment

Park headquarters and the Dante Fascell Visitor Center, the park's main visitor center, are located at Convoy Point in the southwest part of the park, approximately 22 miles from Stiltsville. A ranger station is located on Elliot Key. All functions that serve Stiltsville and the surrounding area originate from these locations.

## SOCIOECONOMICS

The Miami-Ft. Lauderdale metropolitan area is the 12th largest city in the United States, with a combined population exceeding 3.8 million. This represents a 21.4 percent increase since the 1990 census (Census Bureau 2000). The region of greater Miami, encompassing all of Miami-Dade County, is home to 2.25 million people. The Miami-Dade metropolitan area includes the communities of Homestead and Florida City, south of Miami and closest to the park's main visitor center. The city of Miami, at the heart of the metro area, has a population of approximately 400,000. The area has great ethnic diversity: 57 percent of residents are Hispanic, 21 percent are non-Hispanic whites, and 20 percent are African-American (Census Bureau 2000).

Castro's takeover of Cuba in 1959 initiated an influx of Cuban exiles, many well-educated, who left businesses and careers. Their presence brought new life to the city's economy, introduced Spanish as an essential regional language, and began Miami's evolution into a Latin American gateway. The most recent influx of Haitian immigrants has again changed Miami. Creole is now commonly heard throughout the city, and just east of downtown, a community known as Little Haiti has been established.

The median annual household income in the Miami area is \$30,000, compared to \$32,877 for the state of Florida. Approximately 21 percent of the population lives below the poverty level, compared to 14 percent for the state (Census Bureau 2000).

The economy of the region is led by tourism, commerce, and manufacturing. Miami is a destination city for tourists from around the globe. In 2000, 10.1 million tourists visited the Miami area, contributing \$13.3 billion to the local economy (W. Anderson, personal communication). Miami is the largest cruise ship terminal in the world and serves as the principal American gateway for travel to the Caribbean. The city is the processing and shipping hub of a large agricultural region and a major international trade port that generates approximately \$8 billion each year and employs 45,000 people (Miami Port Authority 2000).

Local manufacturing includes production of aluminum, clothing, furniture, machinery, and electronic components. Other important industries are printing and publishing as well as fishing and shellfishing. Miami is home to the National Hurricane Center and the headquarters of the U.S. Armed Forces Southern Command, responsible for military operations in Central and South America (Muller 2001).

The first non-natives settled the Miami area at Ft. Dallas during the Seminole War in 1836. Growth and development began in earnest after Henry Flagler built a railroad and terminus and dredged the harbor in the 1890s. Miami's tourism industry began to grow before World War I and continues today. In 1926, a massive hurricane swept through the area, killing more than 100 people and destroying numerous homes. An economic depression ensued; the Great Depression arrived in Miami three years before it affected the remainder of the nation (Muller 2001). During World War II, numerous training facilities for armed forces were established throughout Miami and other parts of Miami-Dade County. After the war, many veterans returned to the area to establish permanent residences.

The Miami urban center's proximity to Latin America brings in millions of dollars in international trade and commerce (Miami Port Authority 2000). Banking and international finance have become major functions of Miami's bilingual business community. This proximity also places the city along major drug trafficking routes. Crime is widespread and costly to the local economy. However, the tourism industry continues to grow, as evidenced by the recent revitalization of South Beach and Miami's port (Muller 2001).

In 1992, Hurricane Andrew, a category five storm, struck the South Miami and Homestead areas. Andrew shattered the single-storm damage estimate by causing \$15.5 billion in damage to insured property as well as massive uninsured losses; total losses may have been \$30 billion. Although damage was concentrated south of the urban center, Hurricane Andrew was the most destructive natural disaster in U.S. history in terms of property loss (Ayscue 1996). Normal economic activities of the metropolitan area were temporarily disrupted, but main transportation and financial centers were not directly damaged. The area began to recover quickly, and the recovery continues. During Hurricane Andrew, seven structures in Stiltsville were destroyed.

Hurricane Andrew also destroyed Homestead Air Force Base, a large military installation near Homestead and Florida City on a large tract of land adjacent to the south end of Biscayne Bay. Elimination of this facility removed a major part of the economy in this area. The U.S. Air Force considered many options for the site, finally adopting a plan for multiple-use (DOD 2001). The plan, currently being implemented, includes use of part of the property for an U.S. Air Force Reserve base. Reestablishing the economy of this area will probably increase visitor use and demand for marine services near Biscayne National Park.

Biscayne National Park recorded 489,343 recreational visits in 2001, with an accompanying operating budget of \$2.46 million. The park's budget was increased to \$3.44 million for fiscal year 2001 (National Park Service 2000).

Total visitation to Stiltsville is estimated at 8,000 to 10,000 annually. The many social and charitable gatherings occurring at the site likely draw just over 1,000 visitors per structure each year. (A. Baldwin, personal communication).

Although approximately 10 million visitors come to Miami each year, relatively few non-residents have the opportunity to experience Biscayne National Park. Most of the park and its protective islands are accessible only by boat (National Park Service 2000), and tourists do not generally have ready access to boats. Park sites accessible by land are not in high-traffic tourist areas. The park provides daily concession operator boat tours to the islands and reefs; however, the vast majority of recreation visits to Biscayne National Park are from local residents using private boats and watercraft (Lockwood and Perry 1998, 1997).

Miami-Dade Parks and Recreation maintains six marinas, with a total of 900 boat slips, on Biscayne Bay (K. Haley, personal communication). Four of these facilities are in proximity to Biscayne National Park. Public boat launches at these marinas recorded nearly 62,000 launches of private vessels into Biscayne Bay annually (see "Visitor Use and Experience and Visitor Safety" section). The city of Miami operates three marinas, with a total capacity of 967 boats (City of Miami 2000). In addition, numerous private marinas, with capacities from several hundred to less than one dozen, are situated along the shores of Biscayne Bay.

#### AFFECTED ENVIRONMENT

Due to travel time constraints and fuel costs, boaters from harbors and marinas in the northern portion of the bay would be more likely to visit or observe the Stiltsville structures. A study conducted to determine boat use patterns in Miami-Dade County determined that most vessels are launched on boat ramps closest to their destination (BRC 1991); therefore marinas located in South Miami (e.g., Matheson Hammock, Black Point) are more likely to affect visitation to Stiltsville. For boaters leaving the Bay for the open Atlantic, contact with the Stiltsville structures would be determined by use of the Biscayne Channel as they exit and enter the Bay.

## ENVIRONMENTAL CONSEQUENCES

### GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURING EFFECTS

#### GENERAL ANALYSIS METHOD

The interdisciplinary planning team created a process for impact assessment, based on the directives of the Director's Order #12 handbook (Section 4.5(g)).

For each impact topic, applicable regulations were identified and the techniques used to perform the analysis were defined. Each impact topic analysis then involved the following steps:

Define issues of concern based on public scoping.

Identify the geographic area that could be affected.

Define the resource within the area that could be affected. This information is included in the "Affected Environment" section.

Compare the resources to the area of potential effect.

Identify the effects caused by the alternative, in comparison to the no action alternative that would result in removal of the Stiltsville structures, to determine the relative change in resource conditions. Characterize the effects based on the following factors:

Whether the effect would be beneficial or adverse.

The area affected by the alternative, such as local or regional.

Duration of the effect, either short-term or long-term. Unless an impact-topic-specific definition of these terms is provided, the following were used:

A short-term impact would last only a few days or weeks.

A long-term impact would last several years or more, or would recur periodically over several years.

Whether the effect would be a direct result of the action or would occur indirectly because of a change to another impact topic. An example of an indirect impact would be increased mortality of an aquatic species that would occur because an alternative would increase substrate disturbances, which would reduce water quality.

The intensity of the effect, either negligible, minor, moderate, or major. Impact-topic-specific thresholds for each of these classifications are provided in each impact topic methodology section. Threshold values were developed based on federal and state

standards, consultation with regulators from applicable agencies, and discussions with subject matter experts.

Table 9 summarizes the criteria used to define the intensities of the impacts for each impact topic.

Determine whether impairment would occur to resources and values that are considered necessary and appropriate to fulfill the purposes of Biscayne National Park.

Determine cumulative effects by evaluating the effect in conjunction with the past, current, or foreseeable future actions for Biscayne National Park and the region.

If appropriate, identify mitigation measures that may be employed to offset potential adverse impacts.

## **IMPAIRMENT ANALYSIS METHOD**

*Management Policies 2001* (National Park Service 2001b) require analysis of potential effect to determine whether or not actions would impair park resources or values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect park resources and values.

These laws give the National Park Service the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement (enforceable by the federal courts) that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Impairment may result from National Park Service activities in managing the park, from visitor activities, or from activities undertaken by concessioners, contractors, and others operating in the park.

An impact on any park resource or value may constitute impairment. However, an impact would be most likely to constitute impairment if it affects a resource or value whose conservation is:

Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;

Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or



**TABLE 9: BISCAYNE NATIONAL PARK GENERAL MANAGEMENT PLAN AMENDMENT IMPACT THRESHOLD DEFINITIONS**

Impact Topic	Impact Threshold Definition			
	Negligible	Minor	Moderate	Major
Natural resources				
Water quality	Water quality would not be affected, or changes would be either non-detectable or if detected, would have effects that would be considered slight, local, and short-term.	Changes in water quality would be measurable, although the changes would be small, short-term, and the effects would be localized. No mitigation measure associated with water quality would be necessary.	Changes in water quality would be measurable and long-term but would be relatively local. Mitigation measures associated with water quality would be necessary and the measures would likely succeed.	Changes in water quality would be readily measurable, would have substantial consequences, and would be noticed on a regional scale. Mitigation measures would be necessary and their success would not be guaranteed.
Biological resources	Biological resources would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the biological resources.	Effects to biological resources would be detectable, although the effects would be short-term, localized, and would be small and of little consequence to the species' population. Mitigation measures, if needed to offset adverse effects, would be simple and successful.	Effects to biological resources would be readily detectable, long-term, and localized, with consequences at the population level. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.	Effects to biological resources would be obvious, long-term, and would have substantial consequences to biological resources in the region. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.
Endangered or threatened species	No federally listed species would be affected or the alternative would affect an individual of a listed species or its critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population. Negligible effect would equate with a "no effect" determination in U.S. Fish and Wildlife Service terms.	The alternative would affect an individual(s) of a listed species or its critical habitat, but the change would be small and would be short-term. Minor effect would equate with a "may effect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.	An individual or population of a listed species, or its critical habitat would be noticeably affected. The effect would have some long-term consequence to the individual, population, or habitat. Moderate effect would equate with a "may effect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.	An individual or population of a listed species, or its critical habitat would be noticeably affected with a long-term, vital consequence to the individual, population, or habitat. Major effect would equate with a "may effect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.

**TABLE 9: BISCAYNE NATIONAL PARK GENERAL MANAGEMENT PLAN AMENDMENT IMPACT THRESHOLD DEFINITIONS  
(CONTINUED)**

Impact Topic	Impact Threshold Definition			
	Negligible	Minor	Moderate	Major
Ecologically critical areas	Resources that define and are essential to the critical area or ecological processes that sustain the critical area would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the ecologically critical area.	Effects to resources that define and are essential to the critical area or ecological processes that sustain the critical area would be detectable, although the effects would be short-term, localized, and would be small and of little consequence to the critical area. Mitigation measures, if needed to offset adverse effects, would be simple and successful.	Effects to resources that define and are essential to the critical area or ecological processes that sustain the critical area would be readily detectable, long-term and localized, with consequences at the population level. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.	Effects to resources that define and are essential to the critical area or ecological processes that sustain the critical area would be obvious; the effects would be long-term and would have substantial consequences at the population level. Extensive mitigation measures would be needed to offset adverse effects and their success would not be guaranteed.
Cultural resources	The impact is at the lowest levels of detection – barely perceptible and not measurable.	For cultural resources, the impact affects on a site(s) with modest data potential and no significant ties to a living community’s cultural identity. The impact does not affect the character defining features of a National Register of Historic Places eligible or listed structure, district, or cultural landscape.	For cultural resources, the impact affects a site(s) with high data potential and no significant ties to a living community’s cultural identity. For a National Register eligible or listed structure, district, or cultural landscape, the impact changes a character-defining feature(s) of the resource but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.	For cultural resources, the impact affects a site(s) with exceptional data potential or that has significant ties to a living community’s cultural identity. For a National Register eligible or listed structure, district, or cultural landscape, the impact changes a character defining feature(s) of the resource, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register.
Socioeconomic considerations				
Visitor use and experience	Visitors would not be affected or changes in visitor experience or safety would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative.	Changes in visitor experience or safety would be detectable, although the changes would be slight and likely short-term. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.	Changes in visitor experience or safety would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.	Changes in visitor experience or safety would be readily apparent and have important long-term consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

**TABLE 9: BISCAYNE NATIONAL PARK GENERAL MANAGEMENT PLAN AMENDMENT IMPACT THRESHOLD DEFINITIONS  
(CONTINUED)**

Impact Topic	Impact Threshold Definition			
	Negligible	Minor	Moderate	Major
Visitor safety	The impact to public health and safety is not measurable or perceptible.	The effect is measurable or perceptible, and is limited to a relatively small number of individuals at localized areas. Impacts to health and safety may be realized through a minor increase or decrease in the potential accidents or hazards in current accident and hazard areas.	The impact to public health and safety is sufficient to cause a permanent change in accident rates or exposure to hazards at existing low accident and hazard locations or create the potential for additional accidents or hazards in areas that currently do not exhibit noticeable accident rates or exposure to hazards.	The impact to public health and safety is substantial either through elimination of potential hazards or the creation of new areas with a high potential for serious accidents or hazards.
Sound environment/ soundscape	Natural sound environment would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the visitor experience or to biological resources.	Effects to the natural sound environment would be detectable, although the effects would be short-term, localized, and would be small and of little consequence to the visitor experience or to biological resources. Mitigation measures, if needed to offset adverse effects, would be simple and successful.	Effects to the natural sound environment would be readily detectable, long-term and localized, with consequences at the regional or population level. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.	Effects to the natural sound environment would be obvious, long-term, and would have substantial consequences to the visitor experience or to biological resources in the region. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.
Visual resources	The visual quality of the landscape would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the visitor experience.	Effects to the visual quality of the landscape would be detectable, although the effects would be short-term, localized, and would be small and of little consequence to the visitor experience. Mitigation measures, if needed to offset adverse effects, would be simple and successful.	Effects to the visual quality of the landscape would be readily detectable, long-term and localized, with consequences at the regional level. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.	Effects to the visual quality of the landscape would be obvious, long-term, and would have substantial consequences to the visitor experience in the region. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.
Park operations	Park operations would not be affected or the effect would be at or below the lower levels of detection, and would not have an appreciable effect on park operations.	The effect would be detectable and likely short-term, but would be of a magnitude that would not have an appreciable effect on park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and likely successful.	The effects would be readily apparent, be long-term, and would result in a substantial change in park operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.	The effects would be readily apparent, long-term, would result in a substantial change in park operations in a manner noticeable to staff and the public and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, would be extensive, and their success could not be guaranteed.

**TABLE 9: BISCAYNE NATIONAL PARK GENERAL MANAGEMENT PLAN AMENDMENT IMPACT THRESHOLD DEFINITIONS  
(CONTINUED)**

Impact Topic	Impact Threshold Definition			
	Negligible	Minor	Moderate	Major
Socioeconomics	No effects would occur or the effects to socioeconomic conditions would be below or at the level of detection. The effect would be slight and no long-term effects to socioeconomic conditions would occur.	The effects to socioeconomic conditions would be detectable, although short-term. Any effects would be small and if mitigation is needed to offset potential adverse effects, it would be simple and successful.	The effects to socioeconomic conditions would be readily apparent and likely long-term. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.	The effects to socioeconomic conditions would be readily apparent, long-term, and would cause substantial changes to socioeconomic conditions in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed.

Identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

A determination on impairment is included in the impact analysis section for all impact topics relating to Biscayne National Park resources and values. It is based on the impact-topic-specific definition of impairment that is provided in the methodology section for each impact topic that addresses Biscayne National Park resources or values.

## **CUMULATIVE EFFECTS ANALYSIS METHOD**

The Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act require assessment of cumulative effects in the decision-making process for federal actions. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 *Code of Federal Regulations* 1508.7). Cumulative effects are considered for the no action alternative and the action alternatives.

Cumulative effects were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions within Biscayne National Park and in the surrounding region. These actions were identified in the “Connected, Cumulative, and Similar Actions” section. Most evaluations of cumulative effects were qualitative.

## **ENVIRONMENTAL ANALYSIS ORGANIZATION**

Impact topics retained for discussion were described earlier in the “Purpose and Need for the Plan” section. For each impact topic, a brief description of the affected environment relative to the management of the Stiltsville area is provided. An analysis methodology specific to that impact topic, including issues that were identified during scoping, is presented along with relevant regulations and policies. The four alternatives are then evaluated for each of the issues.

## WATER QUALITY

### METHODOLOGY

The first step in determining the effects of the alternatives to water quality was to define the water quality issues of concern to regulators, the public, and other stakeholders. These were determined based on input received during project planning and scoping.

Where water quality changes could cause indirect impacts to the area's plants and animals, those effects are evaluated in the "Biological Resources" section. Water quality impacts of the four alternatives for managing Stiltville were evaluated based on the following issues:

Disturbance of sediments. Increased disturbance of the bay floor would increase suspended sediments in the water and increase sediment deposition on aquatic life. Disturbance of sediments could also make buried toxicants available to aquatic life by reintroducing them into the water column.

Leaching of chemicals from pretreated lumber into the bay's waters. The chemicals leach from lumber that comes into contact with the salt water or that is exposed to rain and salt spray.

Use and storage of fuels used in internal combustion engines in boats, motorized watercraft, and generators. Two-cycle engines, which discharge an oil-gas mixture into the water during operation, were particularly identified as being a contaminant source. Multiple concerns were identified, including the effects of:

Unburned petroleum hydrocarbons.

Fuel additives or trace components, including benzene, toluene, ethylbenzene, and xylenes; methyl tertiary butyl ether (MTBE); and polyaromatic hydrocarbons.

Increased toxicity of chemicals because of interactions in the environment. For example, polyaromatic hydrocarbons released from boat watercraft engines may become more toxic in the presence of sunlight, which could result in mortality of plankton and/or stunt fish growth (Orris *et al.* 1998).

Use and storage of toxic chemicals which could be spilled or dumped into the water. Examples include cleaners, paints, varnishes, and wood-treating chemicals.

Inappropriate storage and disposal of waste products. These include household trash, bilge water, wash and rinse waters, cooking oils, food preparation wastes, and human sewage.

Concentration of bird excrement in a small area. This could result from birds roosting on the structures.

Changes in attitudes and behavior about water quality by the public, both around Stiltville and throughout the bay, because of education received at Stiltville.

Each of these issues was evaluated using the procedures described in the “General Methodology” section. The intensities of effects on water quality were determined using the criteria in Table 9.

## REGULATIONS AND POLICIES

Numerous federal and state laws protect water quality, including the discharge of toxic materials, sewage, and sediment into the nation’s waters. Key among these is the Clean Water Act (33 U.S. Code 1251 *et seq.*) and its implementing regulations in the *Federal Code of Regulations*. Key Florida legislation includes the Florida Water Resources Act of 1972 (Chapter 373, Florida Statutes). Water quality and activities that may affect water quality within Biscayne Bay are regulated and/or monitored by multiple federal, state, regional, and local agencies. Key federal and state agencies are listed below.

### Federal Agencies

National Park Service  
U.S. Army Corps of Engineers  
U.S. Coast Guard  
U.S. Environmental Protection Agency  
Natural Resources Conservation Service  
U.S. Fish and Wildlife Service  
U.S. Geological Survey  
National Oceanic and Atmospheric Administration

### State Agencies

Florida Department of Environmental Protection  
Florida Department of Health and Rehabilitative Service  
Florida Inland Navigation District  
Florida Department of Community Affairs  
Florida Marine Fisheries Commission  
Florida Department of Agricultural and Consumer Services  
Florida Department of Transportation  
Florida Fish and Wildlife Conservation Commission

In addition, the National Park Service, the south Florida Water Management District, and the south Florida Regional Planning Council are the main regional agencies with jurisdictional authority over Biscayne Bay (Mulliken and VanArman 1995).

The south Florida Water Management District’s authority is the management and protection of surface water and ground water, and for the development and implementation of the Surface Water Improvement and Management Plan for Biscayne Bay.

The south Florida Regional Planning Council develops regional policies and comprehensive plans for the protection of the bay and assesses impacts of proposed developments.

Local county and municipal governments have the authority to control land uses that may affect water quality in Biscayne Bay. In addition, county agencies conduct resource studies, and implement and enforce local and delegated state water quality regulations. As mentioned previously, water quality monitoring is performed by the Miami-Dade County Department of Environmental Resources Management.

## IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)

Impacts to water quality could occur to Biscayne Bay as a result of activities related to the implementation of Alternative A. Such activities include the operation of watercraft accessing the structures, the initial rehabilitation of the structures for public use, routine maintenance of the

structures, demolition of unsalvageable portions of the structures, and activities associated with the public and private use and operations of the structures. The effects of Alternative A are evaluated against the no action Alternative D, which proposes the permanent removal of all seven structures from Biscayne Bay; therefore the intensity of impacts of Alternative A are compared to all existing natural and man-made components of this land/seascape, with the exception of the structures and visible activities associated with Stiltsville.

Opening the Stiltsville structures for public use would require upgrades to the structural integrity of the buildings (Phang 2000) and to ensure compliance with the south Florida Building Code. Many of the buildings' components would need reinforcement or replacement. Construction activities would involve the use of heavy equipment within the shallow flats areas or shoals, which may result in bay bottom disturbance, resuspension of sediments, and an increase in turbidity. The Stiltsville non-profit organization would direct that all construction and maintenance activities employ best management practices for the operation of barges, control of turbidity, and control of polluting material. These impacts would be minor and temporary if construction were accomplished in a responsible manner using the latest turbidity control technology. Considering the high volume movement of water around the structures during tidal flows, chemicals that may be present in existing structure materials would cause negligible, long-term, adverse impacts that would be localized.

Reconstruction standards would direct that improvements to pilings, decks, and other construction typically requiring timber products would be built with recycled plastic products manufactured especially for marine environments, or other materials that would be structurally appropriate but without harmful chemicals. This material has several commercial names (Seapiles™, Carefree Lumber™, and others), but all are made from 100 percent post-consumer recycled high-density polyethylene (HDPE). The lumber can be used like wood, but it does not rot, splinter, leach chemicals, or require paint, anti-fouling agents, or preservatives. It is usually guaranteed against damage from moisture, insects, marine borers, and molds for at least 50 years by the manufacturers (<http://www.plasticlumberyard.com/warranty.htm>). Use of these materials would reduce leaching of harmful chemicals and result in long-term beneficial effects that would be of negligible intensity.

The Stiltsville organization would regulate access to the structures. This would occur through requirements placed on entities using and managing the structures to provide skilled or certified boat pilots, clearly marking channels, and implementing wakeless zones. With these controls in place and considering the high volume movement of water around the structures during tidal flows, chemicals that may be emitted from watercraft would cause negligible, long-term, adverse impacts that would be localized.

The structures provide a roosting area for various aquatic birds, sometimes in quantities of a hundred or more; bird deterrent devices have had little effect. The excrement from these birds builds up, especially during periods of little rainfall. While it is unlikely that enough excrement is present to create water quality problems, it is potentially a health hazard and would have adverse effects that would be negligible and short-term.

The information provided by the non-profit organization or its partners at the education facilities would heighten the awareness of the fragility of the estuarine environment. This would result in instilling in more people a respect for the environment and a sense of responsibility regarding the use of the natural resources remaining on the planet. Additionally, guidelines and regulations that direct the appropriate collection, treatment, and disposal of sewage would be implemented. These may include such requirements as:



Boaters would be encouraged to use oil-absorbing materials in the bilges of all boats with inboard engines.

Fuel for the generators would be kept in spill- and corrosion-proof containers with secondary containment to prevent accidental discharges. The use of propane gas generators would be recommended for emergency power, with solar or wind power as the baseline power source.

All trash containers would be made of heavy-duty plastic and secured to decks. The containers would be kept covered to prevent accidental release of trash into the bay.

Sewage containment facilities would be installed and waste removal services will be required.

Use of biodegradable household cleaners such as soaps and detergents within the Stiltsville complex would be encouraged, and amounts used would be kept to a minimum. Consistent with practices elsewhere in the park, cleaners such as Simple Green® would be used, and detergents containing ammonia, sodium hypochlorite, petroleum distillates, lye, or chlorinated solvents would not be used.

Traffic in the Stiltsville areas outside the Biscayne Channel would be minimized. Speeds no greater than headway speeds in shallow water would be enforced. Operators would be trained by the organization managing the structure to ensure that they would be familiar with access routes.

Repairs and new construction would use recycled plastic marine lumber wherever possible. All improvements or activities would use environmentally friendly methods and materials whenever possible.

Buoys demarcating access routes to the structures would be installed to allow improved ingress and egress, while minimizing damage to seagrass beds.

Implementation of these guidelines would lessen the adverse effects to water quality associated with use of the structures in the future.

The precautions taken during the construction and operation of the Stiltsville structures would minimize increases in turbidity and the sedimentation of the seagrass beds, and the stricter controls on waste handling and removal would reduce the introduction of pollutants into the water column. Long-term, indirect, beneficial effects would result from the implementation of the educational program. This alternative would provide an opportunity to educate people about the environment while immersed in it.

### **Cumulative Effects**

While the activities conducted in and around the Stiltsville structures can have an incremental effect on the water quality of Biscayne Bay, this impact is negligible when compared to the overall cumulative effect of other activities in and around Biscayne Bay. For example, when compared to the cumulative water quality impacts of large marinas such as Dinner Key, and to stormwater discharges from the Miami River, Snapper Creek and Coral Gables Waterway, discharges from Stiltsville are insignificant (Mulliken and VanArman 1995).

The negative impacts to the water quality of the local environment due to the implementation of Alternative A would likely be direct, negligible, and long-term. The tidal flushing that occurs across the Safety Valve shoals is strong and sustained, and it is unlikely that there would be any impacts to the local water quality (Curry, Science Coordinator, pers. comm.). Pollutants would be quickly mixed with the waters of either the Florida Straits or Biscayne Bay. The pollutants that may be generated by the activities on and around the Stiltsville structures would be negligible when compared to the pollutant discharges occurring from the Miami River, Snapper Creek, Dinner Key, Matheson Hammock, Paradise Point, and the cruise ships in the Gulf Stream. As mentioned previously, the monitoring stations in the vicinity of Stiltsville have consistently reported that the water quality in Stiltsville is good to fair when compared to state water quality standards.

### **Conclusion**

With the adoption of these best management practices, the implementation of Alternative A would result in negligible to minor, adverse impact to the water quality in the Stiltsville area, and would have a negligible cumulative effect on Biscayne Bay. There would be a long-term, indirect, beneficial impact as a result of the educational, social, and research programs that would be initiated with the implementation of the proposed action. Activities associated with Alternative A would contribute negligibly to the adverse effects on water quality that result from increased urbanization and recreation in south Florida.

Alternative A would not produce major adverse impacts on water quality or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of water quality or values as a result of the implementation of Alternative A.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

The implementation of Alternative B would likely have similar effects on water quality in the vicinity of Stiltsville and Biscayne Bay as Alternative A. Like Alternative A, Alternative B would provide a park presence either within Stiltsville, on Key Biscayne, or somewhere in the vicinity. If the structures are open to the public under the guidance and control of the National Park Service, watercraft traffic management, construction practices, waste and chemical handling, and public education programs would be similar to Alternative A. Watercraft activity in the Stiltsville area would not be significantly different with this alternative than that of Alternative A.

### **Cumulative Effects**

Cumulative effects would be similar to Alternative A.

### **Conclusion**

With the adoption of these best management practices, the implementation of Alternative B would result in negligible to minor adverse impact to the water quality in the Stiltsville area, and would have a negligible cumulative effect on Biscayne Bay. There would be a long-term, indirect beneficial

impact as a result of the educational, social, and research programs that would be initiated with the implementation of the proposed action. Activities associated with Alternative B would contribute negligibly to the adverse effects on water quality that result from increased urbanization and recreation in south Florida.

Alternative B would not produce major adverse impacts on water quality or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of water quality or values as a result of the implementation of Alternative B.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

The effects on the water quality of Stiltsville and Biscayne Bay resulting from the implementation of Alternative C would likely be similar to those of Alternatives A and B. Alternatives A, B, and C would provide a park presence either within Stiltsville, on Key Biscayne, or somewhere in the vicinity, to regulate and monitor watercraft traffic and the activities on the structures, and would place the same access controls on public uses of the structures as in Alternatives A and B. Alternative C provides similar regulations with respect to the types of uses and the number of occupants on the structures, but with the competitive lease program, it is likely that one or more of the structures would be leased for private use. This may result in increased use of several of the structures on weekends and holidays, but overall watercraft activity in the Stiltsville area may be somewhat less than that of Alternative A or B, so the probability of accidental groundings, fuel discharges, or spills may be lower. The use of structures for private purposes may increase the likelihood that a visitor would not have the appropriate navigation skills and could increase opportunities for turbidity from bay bottom disturbances. This would result in negligible, adverse, short-term effects on water quality. However, the likelihood of these impacts occurring with the implementation of the other alternatives has been determined to be negligible.

The implementation of Alternative C would not reduce the number of structures in Stiltsville, so the impacts from the bird excrement would be the same. As with the other action alternatives, this impact would be negligible. The potential for leaching of chemicals from the structures would be similar to that for Alternatives A and B in that the same requirements for use of environmentally friendly construction products would apply for this alternative. The requirements for the containment and removal of sanitary sewer wastes would also be the same, despite the fact that some of the structures may be leased for private use. The potential that some of the structures may be leased for private use may also reduce the availability of the structures for public education and would result in a negligible adverse effect on water quality, especially if some National Park Service presence was maintained at or near Stiltsville.

### **Cumulative Effects**

Cumulative effects would be similar to Alternative A.

### **Conclusion**

With the adoption of these best management practices, the implementation of Alternative C would result in negligible to minor, adverse impact to the water quality in the Stiltsville area, and would have

a negligible cumulative effect on Biscayne Bay. There would be a long-term, indirect, beneficial impact as a result of the educational, social, and research programs that would be initiated with the implementation of the proposed action.

Alternative C would not produce major adverse impacts on water quality or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of water quality or values as a result of the implementation of Alternative C.

### **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

Under this action, there would be negligible, short-term adverse impacts to water quality during the demolition and removal of the structures. The short-term impacts may include disturbance of the sediments by the demolition equipment during the removal procedure, but the potential for these impacts would be reduced if the demolition were conducted during high tide and from a shallow draft barge. There would be a remote potential for impacts to the sediments as a result of debris falling from the structure during demolition, but use of best management practices during demolition would minimize this potential.

Short-term, negligible, adverse impacts may occur as a result of accidental releases of toxic or hazardous materials from the structures, including sewage from holding tanks. The majority of these materials would be removed prior to the demolition effort, but the potential remains for these substances to be released during their removal or during demolition. The implementation of best management practices would minimize the potential release of these substances. Such practices include the placement of floating booms around the structures during demolition, implementing a spill prevention plan prior to initiating the demolition, and having clean-up materials on hand at all times.

The release of watercraft fuel and the opportunity for boat-caused turbidity would be reduced in this area because the watercraft traffic in the shoals would be reduced. Without the structures as an attractant, the majority of the watercraft traffic would be passing through in the Biscayne Channel. This would result in negligible to minor, long-term beneficial effects due to reduced emissions and turbidity from watercraft.

Other potential water quality impacts considered during this analysis are the leaching of chemicals from the structures and/or spills of sewage or hazardous chemicals. Removal of the structures would result in minor to moderate, long-term, beneficial effects on water quality in localized areas.

There would be negligible, long-term, adverse impacts with no potential for public education if the structures were removed. The removal of the structures would remove the potential facilities for research, public education, and other public benefits.

### **Cumulative Effects**

The cumulative effects of the removal action would be negligible to minor and beneficial to water quality. Watercraft traffic in the vicinity would be reduced, thereby reducing the potential increases in turbidity. The historical effects of the chemicals leaching from the structures and from occasional spills of sewage or toxic or hazardous materials would diminish over time, and if no other impacts

occur, the water quality around Stiltsville would continue to improve. A reduction in watercraft traffic in the shoals area would result in a reduction in the release of watercraft fuel in that area. Boat traffic in the Biscayne Channel would continue and the presence of urban pollutants from the metropolitan area would continue. The cumulative effects from this alternative would be beneficial and negligible in the long-term.

## **Conclusion**

Demolition of the structures at Stiltsville would result in localized, short-term, negligible to minor, adverse effects on water quality with implementation of best management practices. Removal of the structures would result in a reduction of watercraft traffic in the area that would represent a negligible to minor, long-term benefit to water quality. Minor to moderate, long-term benefits to water quality in the area would accrue from the elimination of spills, sewage, or hazardous materials entering the water associated with use of the structures. There would be long-term, indirect, adverse impacts resulting from a lack of educational, social, and research programs with implementation of the no action alternative. The cumulative effects of this alternative would be beneficial and negligible.

Alternative D would not produce major, adverse impacts on water quality or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of water quality or values as a result of the implementation of Alternative D.

## BIOLOGICAL RESOURCES

This section includes all life forms, including flora and fauna, which represent an important component of aquatic biomass. Biological resources afforded special protection are discussed in additional detail in the sections “Endangered or Threatened Species” and “Ecologically Critical Areas.”

## METHODOLOGY

The effects of the alternatives on the biotic communities were determined by defining the issues of concern to regulators, the public, and other stakeholders, as identified during project planning and scoping. They include:

The improper disposal of solid waste materials may affect biological resources. Effects may include the accidental ingestion of solid waste material by animals (i.e. sea turtles or dolphins swallowing paper bags, balloons) or injury of animals due to solid waste (i.e. hooking or strangling of birds in discarded fishing line). The accumulation of trash on the bay bottom may degrade habitat.

The discharge of liquid domestic wastes or toxic liquid materials, including fuel, that degrade water quality may affect reproductive success or lead to mortality.

Construction or demolition activity or watercraft use may cause avoidance of the area, degradation or loss of habitat, or mortality.

Direct undesirable effects on seagrass beds may occur from watercraft groundings.

Boating activity may leave scars where propellers scour the bottom, or may cause sufficient water movement to expose seagrass rhizome/roots, which could weaken seagrass stability and benthic habitat.

Structures shade the bay bottom, kill seagrasses, and precludes regeneration.

Aquatic organisms may become dependent upon the structures through the intentional feeding of wildlife or by attracting wildlife through improper trash disposal or fish cleaning.

Noise may affect wildlife during construction and operation of structures and from motorized watercraft use. Noise may interrupt normal activity, cause alarm or flight responses, interfere with courtship, cause habitat avoidance and displacement, cause nest abandonment with decreasing reproductive success, or cause injury or mortality (IWL 1999).

Education programs would promote an understanding and appreciation of the fragile estuarine environment and the associated biological resources.

Each issue was evaluated using the procedures described in the “General Methodology” section. The analysis includes the review of relevant scientific literature and data collected from various surveys of fish (Ault 2001), avian species, and seagrass beds (e.g., Sargent *et al.* 1995; Mansfield and Foster 1995) within the bay. The intensities of effects on biological resources were determined using the criteria in Table 9.

## REGULATIONS AND POLICIES

Numerous laws, statutes, and regulations have been enacted to protect biological resources. These include the water quality laws and regulations mentioned previously, which are intended in part to protect aquatic life, as well as specific regulations for the protection of biological resources.

The National Park Service Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; the species are protected from harvest, harassment, or harm by human activities. The restoration of native species is also a high priority (National Park Service 2002).

Title 36 CFR provides authorization for closing areas and limiting public use to protect resources; providing public notice of closures or use limits; prohibiting the destruction, defacing, or disturbing of resources; and protecting fish and wildlife (36 CFR 1.5, 1.6, 1.10, 2.1-2.5).

The Marine Mammal Protection Act of 1972, most recently reauthorized in 1994, established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters. The term "take" is statutorily defined to mean "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal." Harassment is defined under the 1994 amendments as any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption to behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. Under the Marine Mammal Protection Act, the Secretary of Commerce is responsible for the conservation and management of pinnipeds and cetaceans. This authority has been delegated to the National Marine Fisheries Service. The Act allows incidental take for other than scientific research and commercial fisheries only after an involved public process.

The seagrass beds within the Biscayne National Park, including the Stiltsville area, are considered a special aquatic site. The Environmental Protection Agency identifies six categories of special aquatic sites in their Section 404 b(1) guidelines (*Federal Register* 1980): sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes. These special aquatic sites are subject to provisions of the Clean Water Act. The seagrass beds within the Stiltsville area are classified as a vegetated shallow affording special protection under the Clean Water Act and falling under the U.S. Army Corps of Engineers jurisdiction.

Section 404 of the Clean Water Act establishes a requirement to obtain authorization or a permit prior to any activity that involves any discharge of dredged or fill material into "Waters of the United States." Waters of the United States include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Pursuant to Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers regulates and issues authorization or permits for such activities. Activities that require such authorization or a permit include placing fill or riprap, grading, mechanized land clearing, dredging, excavation and leveling. Any activity that results in the deposit of dredge or fill material within the "Ordinary High Water Mark" of waters of the United States usually requires a permit, even if the area is dry at the time the activity takes place.

Under Section 10 of the Rivers and Harbors Act of 1899, the construction of structures in, over, or under, excavation of material from, or deposition of material into “navigable waters” are regulated by the U.S. Army Corps of Engineers. Navigable waters of the U.S. are defined as those waters subject to the ebb and flow of the tide shoreward to the mean high water mark or those that are currently used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A letter of permission or permit is required from the U.S. Army Corps of Engineers prior to any work being completed within a navigable water.

The National Park Service will consult with the Corps of Engineers if an action is to be taken in the future to replace structural pilings within the Stiltsville area and, if necessary, permits will be sought in compliance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

Seagrasses are also protected by Chapter 373.414, Florida Statutes. This law regulates dredge and fill activities in waters of the state. Any unpermitted activity that causes siltation of seagrass beds is considered unauthorized fill, while propeller scarring and blowouts are considered unauthorized dredging. Fines are levied according to the degree of undesirable effects incurred.

Seagrasses are also protected under Title 16, Chapter 1, Subchapter 111-B, Section 19jj of the Code of Federal Regulations. This regulation states that “any person who destroys, causes the loss of, or injures any park system resource is liable to the United States for response costs and damages resulting from such destruction, loss, or injury.” In addition, “any instrumentality, including but not limited to a vessel, vehicle, aircraft, or other equipment that destroys, causes the loss of, or injures any park system resource or any marine or aquatic park resource shall be liable in rem to the United States for response costs and damages resulting from such destruction, loss, or injury to the same extent as a person is liable under Subsection A of this section.” Under this regulation, any deleterious effects to seagrasses caused by groundings, blowouts, and propeller scarring can result in considerable fines to cover the costs of restoration.

## **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

The effects of Alternative A are evaluated against the no action Alternative D, which proposes the permanent removal of all seven structures from Biscayne Bay; therefore the intensity of impacts of Alternative A are compared to all existing natural and man-made components of this land/seascape, with the exception of the structures and visible activities associated with Stiltsville. Effects to biological resources may occur 1) during construction activities including scheduled renovations and routine maintenance, and 2) during day-to-day operations.

Noise effects associated with Alternative A would result from routine daily activities and during construction and renovation activities. Construction noise may temporarily disturb wildlife in the Stiltsville vicinity during the construction period (including routine maintenance activities). There are no absolute standards of short-term noise effects for potentially noise-sensitive species. Typically, the noise at 15 meters (50 feet) from a construction site does not exceed an equivalent sound level of 90 decibels (dB) (U.S. Environmental Protection Agency 1974). Most of the noise and human activity would be caused by the use of heavy machinery and construction equipment. If construction occurs during the winter months, wintering shorebirds may be disturbed. Construction activities could also disturb foraging or breeding activities of birds, sea turtles, fish and other wildlife in the area. The combination of increased noise levels and human activity would likely displace some birds, including eagles or other listed bird species that may be foraging in the area. Some wildlife may be temporarily displaced by the noise and activity during construction and then return to the area when construction



was complete. Other more sensitive species may permanently abandon the area, while others may become accustomed to the increased noise and human presence.

Adverse, direct effects to biological resources during renovation and construction of this alternative would be negligible to minor, local, and short-term, similar to impacts associated with the demolition of structures under the no action alternative. This would be limited by restricting construction activities to specific time periods and specific methods that would minimize disturbances and through monitoring resources while extensive construction or maintenance activities are underway.

Alternative A would include management of the Stiltsville structures designed to minimize the discharge of wastes (i.e., trash and debris). Currently there are state and federal laws that govern the discharge and disposal of hazardous substances; however, because of the unique and fragile setting of Stiltsville, everyday wastes can affect and disrupt aquatic organisms and their habitats. Potential effects include: discarded cooking oils, petroleum products, and human waste into Biscayne Bay could adversely affect health and survival of plankton and other aquatic organisms living near the structures or add nutrients to the water that will increase algae growth; debris ingested by wildlife could temporarily impair foraging or result in extraordinary stress (e.g., fish and birds swallowing fish hooks or paper goods, slowing normal body functions such as digestion) or permanently affect the animal (sea turtle ingesting plastic items resulting in a blockage in the respiratory system). These effects could eliminate organisms in the various trophic levels of the food chain or simply cause organisms to avoid the area, which may potentially interfere with foraging or breeding activities. Under Alternative A, the non-profit organization would implement and enforce procedures on all structure operators for the handling and removal of trash, debris, and potentially harmful substances, while the presence of National Park Service staff and educational programs would encourage observance of procedures by occupants. Accidental discharges may still occur. Under these conditions, the introduction of substances from the structures into the surrounding environment would produce short- and long-term adverse effects that would be localized and would range from negligible to minor in intensity, depending upon the amount of waste release and its toxicity to organisms.

Under this alternative, guidelines pertaining to the use of fishing line including, but not limited to, fishing line made of monofilament, fluorocarbon, and synthetic braided line, would be developed and implemented, thus reducing the likelihood of entanglements. Entanglements are a major cause of human-induced mortality on avian species (Murphy, pers. comm., 2002) as well as aquatic species. Effects would be negligible to minor and would be short- or long-term, depending on the effect on the animal.

Access channels for the structures would be clearly marked, with access being limited depending on the determined capacity of each individual structure. Those operating boats under agreement with the Stiltsville organization, such as education tour operators, researchers, or lodging operators, would be given detailed instructions or would need to demonstrate proficiency in piloting watercraft to the structures in order to minimize adverse effects to the adjacent submerged habitats of Stiltsville. Less skilled individuals may access structures designated as campsite lodging units or as an interpretive center. These uses would be in structures with easy access, minimizing adverse effects from less skilled operators. Additionally, National Park Service staff and educational programs would increase visitor awareness of the sensitive nature of the surrounding marine environment.

Continued presence of unskilled operators in the area would likely result in undesirable effects on seagrass beds. Exposed area may erode due to the strong tidal movements in the shoals, resulting in the degradation of the sediment substrate that the seagrass require for survival. These eroded areas may expand and continue to become degraded and become a permanent bare bottom community.

These bare areas also provide habitat and conditions for brown and green algal species such as *Dictyota* and *Caulerpa* to colonize and compete with the seagrasses for space (1995). *Caulerpa verticillata*, once confined to the nutrient-rich waters of mangrove swamps, has become invasive in the area due to elevated levels of nitrogen. This species of *Caulerpa* colonizes bare bottom areas and spreads outward from these new areas, eliminating all flora and fauna in its path and creating expanses of monocultures. *Caulerpa verticillata* has not been identified in the Stiltsville area to date, but it is common in the inshore habitats in Biscayne Bay. Because seagrass communities do not recover quickly from disturbance and an increase in the amount of bare areas increases the potential for establishment of invasive algal species, the long-term adverse impacts of boating activity associated with use of the structures would be minor to moderate.

The continued presence of unskilled operators also perpetuates the potential for direct physical impacts on wildlife species, which may result in loss of individual animals from collisions with boats and propellers. Alternative A would have localized, long-term, minor, adverse effects on aquatic organisms due to physical harm to individuals and to destruction of habitat. Because suitable habitat exists throughout the shoals and within Biscayne National Park, wildlife species populations would probably not be affected by continued watercraft use.

Under Alternative A methods would continue to be used to discourage the use of the structures by avian species. However, the structures themselves provide attractive perching areas for predator/prey interactions (i.e., *Buteo* spp. and *Accipiter* spp. intercepting migratory species Chuck-will's-widow - *Caprimulgus carolinensis*) (personal conversation with Biscayne National Park staff). The continued use of methods to dissuade the use of the structures by birds of prey would result in long-term, negligible, adverse effects.

The presence of boats and boat emissions around the structures would produce short-term, negligible to minor, adverse effects on aquatic organisms present in areas around the structures. Studies have demonstrated that outboard (two-cycle) engine exhaust with their discharge of hydrocarbons can affect the developmental phases of aquatic organisms. Laboratory experiments showed that the exhaust of two-cycle engines can adversely affect fish by causing morphological disturbances, disrupting cellular and subcellular processes, disrupting physiological functions. They have also shown that watercraft exhaust may contain substances detrimental to fish during early life stages (Tjarnlund *et al.* 1995 and 1996). The presence of boats and the noise generated may alter wildlife behavior, including avoidance and displacement of animals from foraging and nesting areas and decreased reproductive success (IWL 1999). Controls and capacities set for each structure would limit the number of boats accessing and docked at the structures to no more than 5 to 10 boats at one time. These capacities (which may be adjusted following improved monitoring of effects), speed limits, and programs to teach the public about the fragile nature of the estuarine environment would minimize the adverse effects on biological resources in the Stiltsville area. The capacities along with the large flushing action of tides over the shoals would also minimize effects of watercraft emissions on aquatic organisms in the area. The adverse effects on biological resources of continued boating access to structures would be long-term and negligible to minor.

### **Cumulative Effects**

Wildlife within Biscayne Bay is adversely affected by a loss of habitat within the bay as a result of degradation of water quality and recreational and commercial boating activity. The continued degradation of water quality from stormwater and agricultural runoff and sewage releases into the bay negatively impacts seagrass beds that provide foraging and breeding habitat for many aquatic and avian species. The increasing popularity of watercraft use in the bay has also resulted in a loss of

habitat by physically damaging wildlife habitat and eroding the substrate from accidental groundings and propeller scarring. Increased urbanization in southern Florida has resulted in an increase in recreational activity within the bay, which has increased the potential for adverse effects on wildlife from trash, such as fishing lines and plastics that may be ingested by wildlife, as well as physical harm from collisions with boats or propellers. These events have cumulatively resulted in minor to moderate, adverse effects on biological resources in the bay area. The adverse effects associated with Alternative A would contribute negligibly to these cumulative effects.

## **Conclusion**

Effects to biological resources during routine operations associated with Alternative A would vary depending on the individual disturbance. The adverse effects to biological resources from associated use of the structures, including continued boating activity to access structures and disposal of trash, would be long-term, localized, and negligible to moderate. Adverse effects associated with construction noise that may displace wildlife or disrupt behavior would be localized and temporary and negligible to minor. Adverse cumulative effects from implementation of Alternative A on biological resources would be negligible.

Alternative A would not produce major adverse effects on biological resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of biological resources or values as a result of the implementation of Alternative A.

## **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

The effects of Alternative B would be similar to those of Alternative A. The National Park Service would designate a mix of uses for the structures and would set standards and controls for rehabilitation and use of the structures similar to those of Alternative A. Continued use of structures, watercraft access, and construction activities would likely displace animals or disrupt animal behavior and injure individuals to a similar extent. Because the area of affect is small in comparison to the bay environment and suitable habitat exists adjacent to the area, the adverse effects to wildlife species would be localized, short- and long-term, and range from negligible to minor. Effects on seagrass beds from continued watercraft access to the sites would result in minor to moderate adverse effects due to the fragile nature of the beds and their inability to recover quickly from disturbance.

## **Cumulative Effects**

Cumulative effects associated with implementation of this alternative would be the similar to those described for Alternative A.

## **Conclusion**

The adverse effects to biological resources under Alternative B from associated use of the structures, including continued boating activity to access structures and disposal of trash, would be long-term, localized, and negligible to moderate. Adverse effects associated with construction noise that may

displace wildlife or disrupt behavior would be localized, temporary, and negligible to minor. Revegetation of previously disturbed areas with seagrass would have long-term minor beneficial effects on biological resources. Adverse cumulative effects from implementation of Alternative B on biological resources would be negligible.

Alternative B would not produce major adverse effects on biological resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of biological resources or values as a result of the implementation of Alternative B.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

To the extent that the competitive leasing process resulted in a range of uses and a level of visitation similar to Alternative A, the effects of Alternative C would be similar to those from Alternative A. The National Park Service could award competitive leases with the intent of designating a mix of uses for the structures similar to Alternative A and would set standards and controls for rehabilitation and use of the structures similar to those of Alternative A.

To the extent that leases would be written for private uses, there would be less control over boater behavior. Given the increased presence of National Park Service staff, impacts would not likely be substantially greater than under Alternative A.

### **Cumulative Effects**

Cumulative effects of implementing this alternative would be similar to those described for Alternative A.

### **Conclusion**

Effects to biological resources during routine operations associated with Alternative C would vary depending on the individual disturbance. Compared to the no action alternative, the adverse effects to biological resources from associated use of the structures, including continued boating activity to access structures and disposal of trash, under Alternative C would be long-term, localized and negligible to moderate. Adverse effects associated with construction noise that may displace wildlife or disrupt behavior would be localized and temporary and negligible to minor. Adverse cumulative effects from implementation of Alternative C on biological resources would be negligible.

Alternative C would not produce major adverse effects on biological resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of biological resources or values as a result of the implementation of Alternative C.

## **EFFECTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

Effects to biological resources may occur during the demolition and removal of the structures. These activities would produce negligible to minor, short-term, adverse effects to biological resources. Trash, debris, or hazardous substances may be released during demolition and construction. Equipment such as barges may adversely affect seagrass beds and aquatic organisms if not anchored properly or if used in water that is too shallow. Because of the remote location of the structures, all contractor employees, construction supplies, and heavy equipment would depend on various watercraft and barges. The temporary anchoring of the general watercraft may be able to use the existing docking facilities on the structures. However, larger barges would require anchorage in the existing channels, if possible, or adjacent to the appropriate structure. To further protect biological resources in the area, additional mitigation would be employed that would involve, but not be limited to, the proper disposal of wastes, approved turbidity and erosion control devices, the use of spill prevention devices, and a pre-construction briefing between National Park Service staff and contractors.

Demolition noise may disturb wildlife in the Stiltsville vicinity. There are no absolute standards of short-term noise effects for potentially noise-sensitive species. Typically, the noise at 15 meters (50 feet) from a construction site does not exceed an equivalent sound level of 90 decibels (dB) (U.S. Environmental Protection Agency 1974). Most of the noise and human activity would be caused by the use of heavy machinery and demolition equipment. If the work occurs during the winter months, wintering shorebirds may be disturbed. Demolition activities could also disturb foraging or breeding activities of birds, sea turtles, fish and other wildlife in the area. The combination of increased noise levels and human activity would likely displace some birds, including eagles or other listed bird species that may be foraging in the area. Some wildlife may be temporarily displaced by the noise and activity during removal activity and then return to the area after its completion. More sensitive species may permanently abandon the area, while others may become accustomed to the increased noise and human presence.

Wildlife attracted to the existing structures that have adapted their behaviors and use the structures for shelter, foraging, roosting, and resting, whether as a long-term adaptation or an opportunistic advantage, would incur a long-term negligible adverse effect following removal of the structures. Wildlife species would have to forage and seek refuge in the Safety Valve vicinity without the advantageous use of the existing structures. The high-quality ecosystem found in the Stiltsville area and Biscayne Bay would readily accommodate these species.

Completion of the demolition and removal activities would eliminate direct and indirect biological effects attributed to the presence and use of the structures. Long-term effects would include a reduction in boating related impacts to water quality and the seagrass beds in the Stiltsville vicinity, resulting from substantial reductions in boating activity in the shoals. Implementation of this alternative would reduce physical destruction of habitat such as seagrass beds from grounding and propeller scarring. Reduction in the number of watercraft in the area would also reduce the amount of pollution entering the area from engine emissions. This reduction would be at a rate proportional to the reduction in watercraft. With removal of the structures, the surrounding waters would benefit from a reduction in debris, trash, fishing line, and other potentially harmful substances associated with the historic use of the structures. The long-term, beneficial effects to wildlife species from improved water quality and habitat would be negligible to minor compared to current conditions. Reduced watercraft activity would have long-term, minor to moderate benefits to seagrass beds in the area.

Over time, the Safety Valve shoals would return to natural conditions. Wildlife habitat such as seagrass beds would be restored naturally and through revegetation programs. The return of natural

bay bottom communities in the area occupied by the structures would produce long-term, minor to moderate, beneficial effects. The resulting restored habitat would augment the high quality habitat that presently exists throughout the Safety Valve shoals area.

### **Cumulative Effects**

The no action alternative would result in a reduction in boat traffic in the shoals and the associated effects on wildlife habitat and the substrate. Removal of the structures would facilitate benthic habitat recovery in an area that provides foraging and breeding habitat for many aquatic and avian species. Local, state, and federal entities have implemented programs and plans to protect and restore Biscayne Bay. The south Florida Ecosystem Restoration Task Force has implemented a plan to restore water flows to the bay by restoring natural hydrology upstream. The Surface Water Improvement and Management Plan is directed at improving water quality and quantity as well as restoring and preserving natural bay environments. These efforts to improve conditions of the bay provide minor to moderate benefits to the biological resources the bay supports. The actions associated with this alternative would negligibly contribute to the efforts of these other projects.

### **Conclusion**

Removing the structures at Stiltsville would be beneficial to the biological resources in the direct vicinity of Stiltsville and to Biscayne Bay as a result of improved water quality and habitat. Demolition activity that may displace and disturb wildlife species and disturb habitat would result in negligible to minor, localized, and temporary adverse effects on biological resources. The elimination of the structures and the impacts associated with their use would have long-term, beneficial, negligible to moderate effects on biological resources resulting from restored habitat and improved water quality in the Stiltsville area. The beneficial effects of this action negligibly supports the actions implemented by other agencies to restore and protect Biscayne Bay.

Alternative D would not produce major adverse effects on biological resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of biological resources or values as a result of the implementation of Alternative D.

## **ENDANGERED OR THREATENED SPECIES**

### **METHODOLOGY**

The effects of the alternatives on endangered or threatened species were determined by defining the issues of concern identified during project planning and scoping:

Watercraft use and construction activity may lead to a reduction of seagrass beds that provide habitat for many special concern species.

Increased motorized watercraft traffic could increase the potential injury or death to sea turtles or manatees from collisions with boats.

Brown pelican, bald eagle, and peregrine falcon are known to forage and roost in the area around Stiltsville and may be affected by spills of hazardous materials, sewage releases, discarded fishing line, and bird deterrent devices.

Ingestion of trash originating from Stiltsville may lead to species loss.

The public needs better education on endangered or threatened species and the importance of their habitats, including seagrass beds.

Each of the issues was evaluated using the procedures described in the “General Methodology” section. Park staff maintains lists of the endangered or threatened species within Biscayne National Park, based on casual observations, informal surveys, and information provided by scientists working on projects within the park. Resident and migratory birds in the park are surveyed yearly during the Christmas bird counts conducted by volunteers from the Florida Audubon Society. To date, no surveys of the flora or fauna surrounding Stiltsville have been conducted, with the exception of an informal dive survey recently carried out by park staff (Patterson 2000). The intensities of effects on endangered or threatened species were determined using the criteria in Table 9.

### **REGULATIONS AND POLICIES**

The Endangered Species Act of 1973 provides strict legal protection for endangered and threatened species, as well as those special concern species that may be in jeopardy of extinction, and for which special protection under federal and state law is afforded. In Florida, plants and animals are protected by both state and federal environmental agencies. The state lists of animals are jurisdictionally maintained by the Florida Fish and Wildlife Conservation Commission (FFWCC) and are found in Chapters 39-27.003, 39-27.004, and 39-27.005, FAC. The federal list of plants and animals is published in 50 CFR 17.11-12, and is administered by the U.S. Fish and Wildlife Service (USFWS).

### **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

The effects of Alternative A are evaluated against the no action Alternative D, which proposes the permanent removal of all seven structures from Biscayne Bay. Therefore, the intensity of impacts of Alternative A are compared to all existing natural and man-made components of this land/seascape, with the exception of the structures and visible activities associated with Stiltsville.

The implementation of Alternative A would result in a controlled use of the Stiltsville structures, and therefore less impact than is currently occurring on the habitat of listed species in the area.

The Stiltsville organization would set standards and best management practices for handling waste material and hazardous substances to minimize their release into the waters surrounding the structures. The continued presence of materials that would be harmful to endangered or threatened aquatic or avian species and the potential releases of these would result in adverse, short-term and localized effects. Effects would be of negligible intensity.

Requirements for slower boat watercraft speeds and for trained boat pilots for some public uses would reduce the likelihood of direct boat encounters with individuals of any species. Private use of a structure and uses such as campsites could involve access by operators who may lack adequate knowledge about the Stiltsville area. This may slightly increase the possibility of a boat injuring a manatee or turtle. However, with no documented incidents under prior private use and with increased education and staff presence at Stiltsville, this would result in negligible adverse effects. Access would be restricted to marked channels, and boating in very shallow areas may be prohibited to protect the shoals at low tide. Therefore, the continued presence of boats accessing the structures would result in adverse, short-term, localized, negligible effects.

If the non-profit organization developed an interpretive center, it would provide displays to educate visitors on the importance of the seagrass beds to the endangered species in the area. A heightened awareness of the potential for human impact on the environment may result in fewer impacts.

Several of the structures would likely use solar power, and the non-profit organization would take steps to prevent roosting birds from fouling the photovoltaic cells. This may reduce the number of roosting birds that fall prey to the raptor species that forage in the area. These prey species would be displaced to other areas in the bay, with no net loss of prey available to the bald eagle or the peregrine falcon. The adverse effects of Alternative A on these species would be long-term and negligible. The anti-fouling devices would be designed to avoid harming the birds.

The presence of the structures, access by watercraft, and construction activity may adversely affect seagrass beds in the Stiltsville area. The shading produced by the structures inhibits growth of seagrass. Debris from construction and access to the area by watercraft and construction vessels may disturb seagrass beds and their substrate. Adverse effects to habitat from construction activity would be reduced or avoided using best management practices. These activities may result in some loss of habitat used for foraging by many of the federal- and state-listed species. Nearly half (72,000 acres) of the seagrass beds in Miami-Dade County occur in Biscayne National Park, and the overall condition of the beds is considered to be relatively good. Because suitable habitat exists within and adjacent to Stiltsville, the loss of habitat resulting from implementation of Alternative A would have long-term, localized, negligible effects on listed species that depend upon seagrass habitat.

### **Cumulative Effects**

The destruction of habitat by pollution and by commercial and recreational boating activity in the bay has resulted in degradation of water quality and over 8,000 acres of seagrass habitat being moderately to severely scarred (Sargent *et al.* 1995). Implementation of Alternative A would contribute negligibly to the cumulative effects of other activities that are affecting the habitat of federal- and state-listed species within Biscayne Bay.



The educational displays proposed for the visitor center, together with the boat watercraft tours, classroom activities, and other educational efforts expended by the park staff, would have negligible, long-term, beneficial effects on the endangered or threatened species' populations in Biscayne Bay. When people realize the cumulative impacts of their actions, they generally are more responsible with respect to the preservation of the threatened and endangered species and their environment.

### **Conclusion**

Implementation of Alternative A would result in continued use of the structures, access by watercraft, and construction activity that would cause unwanted effects on habitat in the Stiltsville area. With best management practices and increased National Park Service presence in the area to enforce watercraft regulations, the short- and long-term adverse effects on endangered or threatened species and sensitive habitats would be negligible. Educating the public about the consequences of their activities on protected wildlife and their habitat would likely reduce impacts. The implementation of Alternative A would have long-term, negligible, adverse, cumulative impacts on the preservation of species such as the manatee, sea turtles, and other endangered or threatened species and their habitats.

Alternative A would not produce major adverse impacts on threatened or endangered species whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of endangered or threatened species as a result of the implementation of Alternative A.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

The mix and intensity of uses at Stiltsville would be similar to Alternative A. The National Park Service would implement the same management and regulatory practices as would the Stiltsville non-profit organization. Therefore, the impacts on threatened or endangered species of this alternative would be similar to Alternative A.

### **Cumulative Effects**

The cumulative effects would be similar to those described for Alternative A.

### **Conclusion**

Continued use of the structures, access by watercraft, and construction activity would cause unwanted effects on habitat in the Stiltsville area with implementation of Alternative B. The short- and long-term adverse effects on endangered or threatened species and sensitive habitats would be negligible with implementation of best management practices and with increased National Park Service presence in the area. Educating the public about the consequences of their activities on protected wildlife and their habitat would likely reduce impacts. The implementation of Alternative B would have long-term, negligible, beneficial, cumulative impacts on the preservation of species such as the manatee, sea turtles, and other endangered or threatened species, and their habitats.

Alternative B would not produce major adverse impacts on threatened or endangered species whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the

park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of threatened or endangered species as a result of the implementation of Alternative B.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

To the extent that the competitive leasing process resulted in a range of uses and a level of visitation similar to Alternative A, the mix and intensity of uses would be similar to Alternative A. Therefore, the impacts on threatened or endangered species of this alternative would be similar to Alternative A.

#### **Cumulative Effects**

The cumulative effects would be similar to those described for Alternative A.

#### **Conclusion**

Continued use of the structures, access by watercraft, and construction activity would cause unwanted effects on habitat in the Stiltsville area under Alternative C. The implementation and enforcement of the regulations and best management practices would reduce the potential for negative effects to the protected species. Alternative C would cause negligible, short- and long-term, adverse effects on federal- and state-listed species and sensitive habitats in the Stiltsville vicinity. Educating the public about the consequences of their activities on protected wildlife and their habitat would likely reduce impacts in the future. The implementation of Alternative C would have long-term, negligible cumulative beneficial impacts on the preservation of species such as the manatee, sea turtles, and other endangered or threatened species and their habitats.

Alternative C would not produce major adverse impacts on threatened or endangered species or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of endangered or threatened species as a result of the implementation of Alternative C.

### **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

The removal of the structures would result in limited watercraft traffic within the shoals, primarily associated with flats fishing, reducing the potential for impacts to the habitat for the endangered and threatened species. As stated in previous sections, inexperienced or careless operators of motorized watercraft in the shallow areas can cause impacts to the habitat for endangered and threatened species by impacting the seagrasses and reducing the nursery habitat for prey species. The potential for physical impacts to manatees and sea turtles by collision with boats navigating in the shallow water would also be reduced.

Trash, discarded fishing line and hooks, and other threats to wildlife would be reduced with the structures removed because there would be less human activity in the shoals area.

With the removal of the structures, the seagrass beds may recover. In the long-term, this would provide additional habitat to that currently present throughout the Safety Valve shoals area.

The overall localized, long-term, beneficial effects resulting from implementation of this alternative would be negligible.

Adverse direct effects to endangered or threatened species during demolition and removal activities would be localized, of negligible to minor intensity, and short-term. This would be limited with implementation of best management practices and a detailed demolition and removal plan. Controls could include restricting construction activities to specific time periods and specific methods that would minimize disturbances and through monitoring resources while demolition and removal activities were underway.

### **Cumulative Effects**

The cumulative effects of the removal of the structures on the local environment would be beneficial. Efforts undertaken by local, state, and federal agencies to improve water quality in Biscayne Bay, such as the south Florida Ecosystem Restoration Program and the Surface Water Improvement and Management Plan, indirectly benefit federal- and state-listed species and critical habitat. Reducing nutrient loading and sewage into the bay would help improve water clarity and consequently listed species that forage and breed in the bay. Efforts to rehabilitate eroded areas with seagrasses would also improve habitat by providing continuous, quality habitat for foraging by listed species. The removal of structures and reduced watercraft usage of the Stiltsville area under Alternative D would contribute to these beneficial effects. Because the area involved in this plan is small in comparison to the bay itself, the contribution of beneficial effect would be considered negligible. The combination of all efforts, however, would result in a minor beneficial effect on federal- and state-listed species and critical habitat within the bay.

### **Conclusion**

The long- and short-term effects of the no action alternative on endangered or threatened species would be localized and negligible. The or threatened species would include preservation and enhancement of their habitat and the habitat for their primary forage materials. The cumulative effects of this plan and others to improve water quality and clarity in Biscayne Bay would result in a minor beneficial effect on federal- and state-listed species.

Alternative D would not produce major adverse impacts on threatened or endangered species or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of endangered or threatened species as a result of the implementation of Alternative D.

## ECOLOGICALLY CRITICAL AREAS

### METHODOLOGY

Through internal and public scoping processes, the following issues were identified regarding ecologically critical areas:

Construction activities may result in increased disturbance of the bay floor, increasing suspended sediments in the water and decreasing water clarity in essential fish habitat used for foraging.

Toxic chemicals stored and used on the structures could be spilled or dumped into the water. Examples include cleaners, paints, varnishes, and wood-treating chemicals.

Waste products such household trash, bilge water, wash and rinse waters, and human sewage could be inappropriately stored and disposed.

Seagrass beds, which are representative of essential fish habitat or habitat of concern within the area, may be weakened in various ways from activities associated with the alternatives. Direct deleterious effects on seagrass beds may occur from construction activity, watercraft groundings, or propellers which scour the bottom. The structures themselves shade the bay bottom and preclude regeneration of seagrasses.

Public attitudes and behavior needs to change regarding estuarine environments, including ecologically critical areas around Stiltsville and throughout the bay. Education received at Stiltsville could be an important element of such change.

Each issue was evaluated using the procedures described in the “General Methodology” section. Issues pertaining to ecologically critical areas were evaluated using information obtained through best professional judgment of park staff and experts in the field. In addition, relevant scientific literature and data was used to assess impacts. In particular, fish surveys conducted in the Biscayne Bay by various scientists from the National Oceanic and Atmospheric Administration and University of Miami Rosenstiel School of Marine and Atmospheric Science were used in this evaluation. The intensities of effects on ecologically critical areas were determined using the criteria in Table 9.

### REGULATIONS AND POLICIES

The National Marine Fisheries Service, a division of the National Oceanic and Atmospheric Administration, provides protection for the habitat around Stiltsville as essential to the life cycle of numerous endangered and commercially important species. The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with National Marine Fisheries Service on all actions or proposed actions permitted, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat. Essential Fish Habitat is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The National Park Service will consult with the National Marine Fisheries Service before any action is undertaken that may affect essential fish habitat.

## **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

The effects of Alternative A are evaluated against the no action Alternative D, which proposes the permanent removal of all seven structures from Biscayne Bay; therefore the intensity of impacts of Alternative A are compared to all existing natural and man-made components of this land/seascape, with the exception of the structures and visible activities associated with Stiltsville.

The two primary potential impact concerns that could result if this preferred alternative were implemented are the effects of the construction activity (initial renovation efforts and subsequent maintenance efforts) and the daily operation of Stiltsville (including potential boat groundings and resultant effects; and trash, debris, and hazardous substance discharge into the bay). The effects analyzed include those to the aquatic species listed above and to their respective prey and habitats.

The primary effect of implementing Alternative A on the identified ecologically critical areas in Biscayne National Park would be to the seagrass beds. The seagrass habitats provide a vital function in Biscayne Bay (see “Biological Resources” section).

The preferred alternative would require significant renovations. Because of the remote location of the structures, all contractor employees, construction supplies, and heavy equipment would rely on various watercraft and barges. The installation of new pilings on the structures would require watercraft and barges to be directly adjacent to the work area. The temporary anchoring of these craft adjacent to the stilt-structures would have direct effects on the submerged aquatic vegetation (i.e., seagrass beds) under the anchored vessels and potentially affect seagrass beds further removed from the work area. To protect this ecologically critical habitat, construction activities would involve the use of approved turbidity and erosion control devices, the use of spill prevention devices, and a pre-construction briefing between National Park Service staff and contractors. Construction and renovation activity would result in indirect, negligible to minor, short-term localized impacts to the adjacent benthic habitats that represent ecologically critical areas with implementation of best management practices, similar to effects associated with the demolition of structures under the no action alternative.

The preferred alternative would include regulations and controlled access to structures to reduce the effects on the surrounding submerged habitats. Access to the structures would be limited based on a determined capacity. Guidelines established by National Park Service personnel to enforce regulations would reduce inadvertent adverse effects, such as propeller scars and groundings, on the adjacent submerged habitats of Stiltsville. However, some groundings and resultant effects on benthic habitat would occur from watercraft access to structures. Because seagrass beds, which represent a significant aspect of ecologically critical areas in the Stiltsville area, do not recover rapidly from disturbance, the adverse effects of motorized watercraft use in Stiltsville to access structures would be localized, long-term, and minor to moderate compared to the no action alternative.

Guidelines and regulations that direct the appropriate collection, treatment and disposal of trash and sewage would be established under Alternative A. In addition, an educational program would heighten public awareness of the fragility of the estuarine environment and the effects of human presence in the environment. A decrease, compared to historic uses, in the amount of discarded trash, debris, hazardous materials, and fishing tackle items generated from the structures into the bay would be expected. These actions associated with the preferred alternative would result in improved water quality and decreased direct physical contact with benthic habitats, benefiting ecologically critical areas. However, the long-term adverse effects of waste being discarded into the environment would be minor.

### **Cumulative Effects**

Increased urbanization along Biscayne Bay and agricultural use in southern Florida have resulted in increased recreation use of the bay and increased water quality degradation related to agricultural and stormwater runoff. Degraded water quality and increased boating activity have severely impacted seagrass beds and benthic habitat that represent ecologically critical areas in the bay. The destruction of habitat from recreational boating activity in the bay has resulted in over 8,000 acres of seagrass habitat being moderately to severely scarred (Sargent *et al.* 1995). Increased turbidity resulting from increased nutrient loading from agricultural areas and sewage has degraded visibility in habitats used by numerous fish species and manatees for forage. The contribution of all of these activities has moderately impacted ecologically critical areas within the bay. The activities associated with Alternative A that adversely affect ecologically critical areas within the Stiltsville area are negligible in comparison to other activities occurring that affect Biscayne Bay and threaten essential fish habitat and habitat of concern.

### **Conclusion**

With implementation of best management practices, construction and renovation activity would result in indirect negligible to minor short-term impacts to ecologically critical habitats, similar to effects associated with the demolition of structures under the no action alternative.

Continued use of boats to access structures would negatively impact seagrass beds and substrates that represent essential fish habitat in the Stiltsville area. This disturbance to essential habitat would represent a localized, long-term, minor to moderate, adverse effect to ecologically critical areas. The long-term adverse effects on ecologically critical areas from discarding of wastes into the environment would be minor. Educating the public about the consequences of their activities on fragile estuarine ecosystems that includes essential fish habitat and habitat of concern could reduce adverse effects in the future.

Implementation of Alternative A would contribute negligibly to the adverse cumulative effects on ecologically critical areas in Biscayne Bay.

Alternative A would not produce major adverse effects on ecologically critical areas or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of ecologically critical areas or values as a result of the implementation of Alternative A.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

Continued use of the structures, watercraft access to the structures, construction and renovation activities, and public education programs would occur under Alternative B as described above for Alternative A. The impacts of implementing this alternative on ecologically critical habitats would therefore be similar to those described for Alternative A.

### **Cumulative Effects**

Cumulative effects would be similar to Alternative A.

### **Conclusion**

Construction and renovation activity would result in indirect, localized, negligible to minor, short-term impacts to ecologically critical habitats. Continued use of the structures and associated watercraft activity would negatively impact seagrass beds and substrates that represent essential fish habitat in the Stiltsville area, resulting in a localized, long-term, minor to moderate, adverse effect to these ecologically critical areas. Educating the public about the consequences of their activities on fragile estuarine ecosystems that includes essential fish habitat and habitat of concern could reduce adverse effects in the future.

Implementation of Alternative B would contribute negligibly to the adverse cumulative effects on ecologically critical areas in Biscayne Bay.

Alternative B would not produce major adverse effects on ecologically critical areas whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of ecologically critical areas as a result of the implementation of Alternative B.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

The effects on ecologically critical areas within Stiltsville resulting from implementation of Alternative C would be similar to those discussed for Alternative A. Construction and renovation activities with implementation of best management practices would result in negligible to minor, short-term, adverse effects on essential fish habitat or habitats of concern.

Alternative C would continue use of the structures, regulating the types of uses and carrying capacity of the structures. A permanent National Park Service presence in the area could lessen the impacts to ecologically critical areas through enforcement of regulations. Implementation of this alternative would reduce watercraft activity in the Stiltsville area and the potential for accidental groundings and propeller effects compared to Alternatives A and B. A competitive leasing program may result in structures being leased by private entities, which may result in increased use of the structures during weekends and holidays. The use of the structures for private purposes may increase the potential for unskilled boat operators in the area. Overall the long-term, adverse impact on ecologically critical habitats, such as seagrass beds, due to continued use of these structures, would be minor to moderate.

### **Cumulative Effects**

Cumulative effects on the ecologically critical areas in Biscayne Bay from implementation of Alternative C would be similar to those discussed above for Alternative A.

## Conclusion

Construction and renovation activity would result in indirect, localized, negligible to minor, short-term impacts to ecologically critical habitats. Watercraft use of the area may decrease under this alternative. However, use of some of the structures by private entities would likely result in the presence of unskilled boat operators accessing the area and damaging seagrass beds and disturbing the substrate. This would result in a localized, long-term, minor to moderate, adverse effect to ecologically critical areas. Educating the public about the consequences of their activities on fragile estuarine ecosystems that includes essential fish habitat and habitat of concern could reduce adverse effects.

Implementation of Alternative C would contribute negligibly to the adverse cumulative effects on ecologically critical areas in Biscayne Bay.

Alternative C would not produce major adverse effects on ecologically critical areas or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of ecologically critical areas or values as a result of the implementation of Alternative C.

## IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)

Potential effects to ecologically critical areas, such as essential fish habitats, could occur during the demolition and removal activities of Alternative D. The concerns analyzed include effects to the aquatic species listed above and the effects to their respective prey items and habitats. The significance of the seagrass and submerged habitats present at Stiltsville is described in detail in the "Biological Resources" section.

Effects to ecologically critical areas may occur during the demolition activities proposed for Alternative D. Implementation of best management practices and a detailed demolition and removal plan would minimize the likelihood of unanticipated effects to ecologically critical areas. Short-term effects of the demolition and removal activities would include potential effects to the seagrasses due to watercraft groundings, the discharge of trash and other materials associated with the removal of the existing structures, the discharge of toxic and hazardous substances, and the potential release of petroleum substances from the watercraft and construction equipment used in the demolition and removal activities. With mitigation measures, the localized effects to the ecologically critical areas during the removal activities would be negligible to minor and short-term.

Long-term effects would include a reduction in watercraft-related impacts to the submerged habitats in the Stiltsville vicinity. Without the presence of the structures, watercraft activity would decline in the shoals, reducing the watercraft groundings attributed to past use and eliminating the pollutant discharges from watercraft accessing the structures. Watercraft groundings in the seagrasses would continue to be proportional to the number of watercraft using the navigational channel; however, these effects would be negligible compared to the historic submerged habitat effects that have occurred from the direct use of the structures. The reduction in watercraft activity on the shoals would have long-term, minor, beneficial effects on ecologically critical areas.

Over time, the Safety Valve shoals would return to natural conditions. Seagrass would be restored naturally. The resulting restored habitat would augment the high-quality habitat that presently exists throughout the Safety Valve shoals area.



## **Cumulative Effects**

The cumulative effects of the removal alternative would be beneficial in that the majority of the watercraft traffic through the Safety Valve area would be limited to the Biscayne Channel. With this reduction in traffic, the seagrass habitat, an essential fish habitat within the bay, would either regenerate over many years or be replanted, and degradation of water quality from boating emissions would be reduced. With the removal of the structures, there would be lower potential for the accidental release of trash, toxins, and waste. These factors would benefit ecologically critical habitats within Stiltsville and adjacent areas.

Activities undertaken by local, state, and federal agencies to improve water quality in Biscayne Bay, such as the south Florida Ecosystem Restoration Program and the Surface Water Improvement and Management Plan, indirectly benefit ecologically critical areas. Reducing nutrient loading and sewage flow into the bay would help improve water clarity, benefiting these ecologically critical areas where many aquatic organisms forage. Efforts to rehabilitate eroded areas with seagrasses would also improve essential fish habitat by providing continuous quality habitat for foraging aquatic organisms. The removal of structures and reduced watercraft use of the Stiltsville area under Alternative D would contribute to these beneficial effects. Because the area involved in this plan is small in comparison to the bay itself, the contribution of beneficial effect would be considered negligible. The combination of all efforts, however, would result in minor to moderate beneficial effects on ecologically critical resources and values within the region of the bay.

## **Conclusion**

Stiltsville is located in a highly productive seagrass habitat (Mulliken and VanArman 1995), and the identified essential fish habitat species use the bay for various functions of their life cycle. Localized effects to the ecologically critical areas during the structure removal activities would be negligible to minor and short-term with implementation of best management practices. The localized long-term beneficial effects of Alternative D on ecologically critical areas in the Stiltsville area would be minor to moderate, with a reduction in boating activity in the shoals. The cumulative effects of this plan and others to improve water quality and clarity would result in a minor to moderate beneficial effect on ecologically critical areas in the bay.

Alternative D would not produce major adverse effects on ecologically critical areas whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of ecologically critical areas as a result of the implementation of Alternative D.

## CULTURAL RESOURCES

### METHODOLOGY

Impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, consistent with the regulations of the Council on Environmental Quality (CEQ 1978) that implement the National Environmental Policy Act. These impact analyses also intend to comply with the requirements of Section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 (36 CFR Part 800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by:

Determining the area of potential effects;

Identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places;

Applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and

Considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register. For example, this could include diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of *no adverse effect* means there may be an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

Council on Environmental Quality regulations (CEQ 1978) and *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (National Park Service 2001a) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. Any resulting reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 might be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis for cultural resources. The summary is intended to meet the requirements of Section 106 and is an assessment of the effect of implementing the alternative on cultural resources, based on the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

The cultural and historical resources at Biscayne National Park were identified by researching historic records at the park, the Southeast Regional Office of the National Park Service, the University of

Miami, the Tebeau History Museum and Research Center of the Historical Association of Southern Florida, and other libraries. This research was conducted by Leynes *et al.* in 1998.

Because most cultural resources are nonrenewable, any effects on archeological, historic, or ethnographic resources, and on most elements of a cultural landscape would be long-term.

## ISSUES

Cultural resource issues include the potential for deleterious effects to cultural resources from vandalism, construction activities, or inadvertent exposure of the resources by increased erosion.

## REGULATIONS AND POLICIES

Numerous legislative acts, regulations, and National Park Service policies provide direction for the protection, preservation, and management of cultural resources on public lands. These laws and policies establish considerations in planning, such as in general management plans and implementation plans, and in administrative actions, such as rule-makings. They also define how cultural resources must be managed in future undertakings resulting from approved plans and rules, regardless of the final alternative chosen. Applicable laws and regulations include the:

National Park Service Organic Act of 1916 (P.L. 64-235);

Antiquities Act of 1906 (P.L. 59-209);

National Historic Preservation Act of 1966 (P.L. 89-665);

National Environmental Policy Act of 1969 (P.L. 91-190);

Archeological Resources Protection Act of 1979 (P.L. 96-95); and

Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601).

Applicable National Park Service policies relevant to cultural resources are included in *Management Policies 2001* (National Park Service and the *Cultural Resource Management Guideline* (DO-28).

The National Park Service Organic Act established the agency to manage the parks and monuments with the purpose of conserving historic objects within them and providing for their enjoyment.

The Antiquities Act authorized the President to establish historic landmarks and structures as monuments owned or controlled by the U.S. government and instituted a fine for unauthorized collection of their artifacts.

The National Historic Preservation Act, as amended, required in Section 106 that federal agencies with direct or indirect jurisdiction over undertakings take into account the effect of those undertakings on properties that are listed on, or eligible for listing on, the National Register of Historic Places. The act further requires federal land managers to establish programs in consultation with the State Historic Preservation Office to identify, evaluate, and nominate properties to the National Register. This act applies to all federal undertakings or projects receiving federal funds. The act also provides for confidentiality provisions where the release of sensitive site location information could endanger the resource.

The National Environmental Policy Act declared a federal policy to preserve important historic, cultural, and natural aspects of our national heritage, and required federal agencies to use a systematic, interdisciplinary approach to ensure the integrated use of the natural and social sciences in planning and in decision making which may have an impact on the human environment.

The Archeological Resources Protection Act further strengthened the federal government's efforts to protect and preserve archeological resources on public lands by stiffening criminal penalties, as well as instituting civil penalties, for the unauthorized collection of artifacts. Additionally, it established a permit system for the excavation and removal of artifacts from public lands, including their final disposition.

The Native American Graves Protection and Repatriation Act set forth procedures for determining the final disposition of any human remains, funerary objects, or objects of cultural patrimony discovered on public lands or during the course of a federal undertaking.

Florida State Historic Preservation Office, relevant tribes and tribal historic preservation officers, and, as appropriate, the Advisory Council in Historic Preservation would be afforded an opportunity to review and comment on the action.

#### **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

The implementation of Alternative A would have a minor beneficial effect on these resources by helping to preserve them for future use. Undesirable effects on cultural resources are unlikely, however, some indirect effects to submerged cultural resources may occur during construction activity resulting from disturbance to the bay bottom when anchoring barges and vessels or debris entering the water. Surveys of the substrate around those structures requiring significant improvements, such as the replacement of pilings, would be completed prior to project implementation. Newly discovered resources would be evaluated, documented and potentially removed, and appropriate mitigation measures would be developed in consultation with the Florida State Historic Preservation Officer to help avoid or reduce any potentially adverse impacts. Best management practices would be employed during the rehabilitation of the structures and replacement of pilings to reduce or avoid disturbance of the bay bottom. With these mitigations, only negligible, adverse impacts on presently unidentified submerged resources would be expected.

Enforcement of the park's regulations against disturbance of cultural resources would also continue. The addition of a regular presence in this northern portion of the park, such as the location of a satellite park office in one of the structures, would provide more protection against vandalism for submerged cultural resources by decreasing response time to Archeological Resources Protection Act or Antiquities Act violations. In addition to protecting resources from vandalism, the presence of a ranger in the vicinity would help reduce impacts to the seagrass beds from user activity, including watercraft access to the structures, and reduce the potential for inadvertent exposure and subsequent erosion of submerged cultural resources. The effects on cultural resources from continued use of the structures and access by watercraft would be localized, long-term, and negligible to minor.

The designation of one or more of the structures for educational and/or interpretive uses provides an invaluable opportunity to present visitors with Stiltsville's unique history and cultural resources. Although the history of the area may be told offsite, describing the cultural resources at Stiltsville would be more effective as it gives the park visitor a greater appreciation for the ambience and an increased understanding of the area.

### **Cumulative Effects**

The number and variety of archeological and historic resources in the region continues to diminish through development, erosion, vandalism, and collection of artifacts for profit or personal interest. Undesirable effects on cultural resources may occur under Alternative A from watercraft or construction activity. These activities contribute cumulatively to the losses of cultural resources available for scientific study and visitor enjoyment. However, loss would be minimized by use of proper controls on construction, park staff presence, and improved education.

When the negligible adverse impacts of Alternative A are combined with these past, present, and foreseeable future activities affecting cultural resources, negligible to minor, adverse, cumulative effects on archeological and historic resources would be anticipated.

### **Conclusion**

The implementation of the preferred action would have negligible long-term adverse impacts on submerged cultural resources from construction. Negligible to minor localized long-term adverse effects to cultural resources would result from the continued use and access to the structures compared to the no action alternative. The cumulative effects to cultural resources under this alternative would be adverse and negligible to minor.

Alternative A would not produce major adverse impacts on cultural resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of cultural resources or values as a result of the implementation of Alternative A.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

Alternative B would result in the National Park Service being responsible for the management, renovation, and maintenance of the seven stilt structures. The uses of the structures and the management prescriptions for this alternative would be the same as described for Alternative A. The effects to cultural resources therefore would be similar to Alternative A.

### **Cumulative Effects**

The cumulative effects associated with implementation of Alternative B would be similar to those described for Alternative A.

### **Conclusion**

The implementation of Alternative B would have negligible, long-term adverse impacts on submerged cultural resources from construction. Negligible to minor localized long-term adverse effects to cultural resources would result from the continued use and access to the structures compared to the no action alternative. The cumulative effects to cultural resources under this alternative would be adverse and negligible to minor.

Alternative B would not produce major adverse impacts on cultural resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of cultural resources or values as a result of the implementation of Alternative B.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

The implementation of Alternative C would likely have the same effect on cultural resources as Alternatives A and B. Like Alternative A, this alternative would provide a National Park Service presence either within Stiltsville or in the vicinity, to regulate use of the structures and watercraft activity. The competitive leasing program proposed with this alternative may result in the structures being leased for private use, which may result in increased use of the structures on weekends and holidays, but significantly less use on weekdays compared to Alternatives A and B. This may lead to less watercraft activity in the Stiltsville area and therefore a potential for less disturbance to the bay bottom that can expose submerged cultural resources. However, this potential improvement over Alternative A may be offset by an increase in the likelihood that the non-professional boat operators may lack the proper navigational skills required to access the area and could increase opportunities for scouring and erosion of the bay bottom. The long-term, adverse effects on cultural resources from access to the structures would therefore be negligible to minor.

#### **Cumulative Effects**

The cumulative effects associated with implementation of Alternative C would be similar to those described for Alternative A.

#### **Conclusion**

The implementation of Alternative C would have negligible, long-term, adverse impacts on submerged cultural resources from construction, and would have minor, beneficial effects on the structures themselves. Negligible to minor, localized, long-term adverse effects to cultural resources would result from the continued use and access to the structures compared to the no action alternative. The cumulative effects to cultural resources under this alternative would be adverse and negligible to minor.

Alternative C would not produce major adverse impacts on cultural resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of cultural resources or values as a result of the implementation of Alternative C.

### **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

Undesirable effects on the submerged cultural resources during the removal of the structures if debris fell on the bottom could occur during demolition. Surveys of the substrate around all of the structures would be completed prior to demolition. Newly discovered resources would be evaluated, documented

and potentially removed, and appropriate mitigation measures would be developed in consultation with the Florida State Historic Preservation Officer to help avoid or reduce any potentially adverse impacts. Best management practices would also be employed during the demolition activity to reduce or avoid disturbance of the bay bottom. With these mitigations, only negligible, adverse impacts on presently unidentified submerged resources would be expected. Structural removal would require consultation and coordination with the State Historic Preservation Office.

The removal of the structures could prevent accidental impacts to the submerged cultural resources during a storm event. During Hurricane Andrew, seven of the structures were damaged beyond repair and the debris was scattered around the vicinity. Removing the structures would minimize the likelihood of debris damaging the wrecks.

It is far more likely that the submerged cultural resources would benefit from the removal of the structures. The removal of the Stiltsville structures would reduce the watercraft traffic in the vicinity, which reduces the potential for groundings and accidental direct deleterious effects on submerged resources. Groundings in the vicinity of the structures can also negatively impact submerged resources because the affected area within the seagrass beds often erodes and expands. In the past, vandals have used the structures as staging areas for illegal digs and for orientation in locating the submerged wrecks. With the structures removed, the cultural resources would be more difficult to locate and excavation would be more difficult without a staging area. Overall, the removal of the structures would provide long-term benefits for future archeological research and result in negligible to minor benefits to cultural resources in the area.

### **Cumulative Effects**

The cumulative effects of this alternative on cultural resources would be less than those described for the other action alternatives. The region would lose an opportunity to educate the public regarding the history of the area in an exciting and unique environment, but there would be opportunities to inform the public about historical facts in other locations.

### **Conclusion**

With implementation of mitigation measures to reduce or avoid disturbance to cultural resources, the demolition activities associated with the structure removal would result in long-term negligible to minor adverse impacts. Reduced visitor use of the area after structure removal would reduce erosion of the bay bottom that could expose resources and reduce potential for vandalism and would result in long-term negligible to minor benefits to submerged cultural resources in the area. Demolition activities would contribute to other activities that negatively affect cultural resources, resulting in negligible to minor, cumulative effects on these resources.

Alternative D would not produce major adverse impacts on cultural resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of cultural resources or values as a result of the implementation of Alternative D.

## VISITOR USE AND EXPERIENCE AND VISITOR SAFETY

### METHODOLOGY

The first step in determining the effects of the alternatives on visitor experience and safety was to define the issues of concern. Each issue was evaluated using the procedures described in the “General Methodology” section. This impact analysis evaluates several aspects of visitor experience and safety, including diversity of activities, interpretation, visitor facilities and services, visitor experience values, structural integrity of the buildings, and appropriate, safe visitor activity. The conceptual nature of the alternatives necessitates qualitative analysis rather than quantitative. Consequently, professional judgment was used to reach reasonable conclusions as to the intensity and duration of potential impacts. The intensities of effects on visitor use and experience and visitor safety were determined using the criteria in Table 9.

Issues identified during planning and scoping include:

The numbers and types of people able to use Stiltsville from the various segments of the local community.

The types of experiences offered at Stiltsville, including education and interpretation and private family and social gatherings. There are currently few or no opportunities for visitor education in the northern portion of the park. The general public has been excluded from the Stiltsville structures except through specific invitation from members of the former leaseholder groups. The only way to access the site currently is with a private boat.

Increased visitor awareness of the existence and extent of the park.

Accessibility of the Stiltsville structures, including disabled access and opportunities for the economically disadvantaged.

The structural integrity of the buildings and their ability to safely accommodate large numbers of people. This includes the adequacy of protective features, such as guardrails.

Major social events, which can draw numerous boats, causing crowding and congestion in the channel and around the structures. The structures are not engineered for large numbers of people, and may be unsafe when such events occur; at least one structure failed during one such party, causing death and injuries. The conditions documented in the structural engineer’s report, which is included in Appendix A, may also pose safety hazards to visitors.

### REGULATIONS AND POLICIES

Management to provide for public enjoyment is directed by National Park Service *Management Policies* and the Organic Act. *Management Policies 2001* (National Park Service 2001b) states that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all park units and that the National Park Service is committed to providing appropriate, high-quality opportunities for visitors to enjoy the park units. Because many forms of recreation can take place outside of a national park setting, the National Park Service therefore seeks to:



Provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in a particular park unit.

Defer to others to meet the broader spectrum of recreational needs and demands that are not dependent on a national park setting. Those others can include local, state, and other federal agencies; private industry; and non-governmental organizations.

Unless mandated by statute, the National Park Service will not allow visitors to conduct activities that:

Would impair park resources or values;

Create an unsafe or unhealthful environment for other visitors or employees;

Are contrary to the purposes for which the park was established; or

Unreasonably interfere with the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; National Park Service interpretive, visitor service, administrative, or other activities; National Park Service concessioner or contractor operations or services; or other existing, appropriate park uses.

#### **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

Under Alternative A, Stiltsville would be operated by the Stiltsville non-profit organization and its co-operators to provide a broad range of public uses. Overall, increased opportunities would result for the general public to benefit from the structures in ways not previously available. The Stiltsville structures would also enhance Biscayne National Park's capabilities to meet objectives for visitor understanding and appreciation of the park's resources and significance, and for protection and monitoring of park resources.

Alternative A would leave the Stiltsville structures in place. The structures would be rehabilitated and no major changes would be made to their appearance. The Miami community has expressed a strong sense of identity with Stiltsville and the site's association with Miami's vacation and recreation roots and is valued by many in the community. Under Alternative A, the history of the site and the nature of Stiltsville's place in Miami's built environment would not diminish and would continue as a source of enjoyment for the community. Viewing the structures from the mainland, from private boats, or as an attractive feature of local commercial tours would not be affected. This would result in long-term, minor to moderate, beneficial effects. The effect would be greater for those who have a stronger appreciation for or attraction to Stiltsville.

Annual visitation to the Stiltsville site would increase. Recreational and educational opportunities, and other site uses such as the "artist-in-residence" program, could create a small hub of activity within the park. The site would probably serve between 18,000 and 25,000 visitors per year. Visitors would arrive in small to medium size groups (e.g., school groups of 15 to 20 students) over a widespread use period.

Docking and mooring would be controlled and safety boating would be promoted through channel markers, wakeless zones, and requirements for certified operators for some uses. These actions would result in negligible to minor, beneficial impacts on visitor safety in the long term.

Physical improvements to the structures would ensure the structural integrity of the structures to support larger groups of people. Steps, decking, and handrails would all be of sound construction and would meet local building codes. These actions would produce long-term, minor, beneficial effects on visitor safety.

Stiltsville is many miles from the park's main visitor and administrative center at Convoy Point. Visitors in the northern portion of the park, including Stiltsville, are often unaware that they are in a national park. This is in part due to the minimal presence of park staff in this portion of the park. Increased presence of staff to contact visitors, conduct programs and services for the public, and operate a developed National Park Service site in the northern reaches of Biscayne National Park would serve to increase visitor awareness of the existence of the park and their presence in it.

Educational exhibits, interpretive activities, and locations for educational functions and classes would convey important environmental and resource stewardship information to potentially thousands of visitors a year. Overall visitor understanding and appreciation of the park would be enhanced by the learning experience provided at the Stiltsville site. This would result in long-term, minor to moderate, beneficial effects on visitor experience as visitors increase their knowledge and appreciation of the park and of Stiltsville.

An increased segment of the Miami community would be able to directly benefit from the Stiltsville structures. The presence of an interpretive center would open structures to anyone with a boat. If water taxi service were feasible and available, access would be increased to community members without boats. Clubs and service groups would have access for outings.

Rehabilitation of some of the structures would include Americans with Disabilities Act accessibility improvements. This would be beneficial and of moderate to major intensity for those with impairments that would otherwise limit their access to the structures and environment of Stiltsville.

Alternative A would provide opportunities to coordinate with the Miami-Dade County Public Schools to provide unique educational programs and experience. Groups of children, such as school classes, could be transported to Stiltsville via commercial carriers such as water taxis. The children would then spend a full or half day in a structured learning experience on the bay. For many of these children, particularly those who are economically disadvantaged, such a visit to Stiltsville could provide an opportunity to learn about the bay environment that might be otherwise difficult to obtain.

Overall improvement to site accessibility and service to a broad range of the public would generate beneficial impacts to those segments of the community that would be long-term and moderate in intensity.

The likely effects to activities commonly pursued by park visitors are summarized in Table 10.

For those visitors seeking a more solitary experience, such as those fishing on the flats, would be adversely affected by increased activities at Stiltsville. Past use patterns have resulted in primarily weekend use. Alternative A would increase weekday use and result in minor to moderate adverse effects on visitors who are used to lower levels of use at those times. Boat traffic would still be present in the Biscayne Channel by boaters accessing the open ocean.

**TABLE 10: ANTICIPATED EFFECTS TO COMMON VISITOR ACTIVITIES  
IN THE VICINITY OF STILTSVILLE**

<b>Activity</b>	<b>Effect</b>	<b>Explanation</b>
Fishing	Negligible adverse	The Safety Valve flats would still be available and accessible to visitors fishing from small watercraft that are appropriate for maneuvering in shallow waters.
Scuba diving	No effect	The Stiltsville site and the Safety Valve are not suitable for scuba diving, and this activity would not be affected by the proposed action.
Snorkeling	Negligible adverse	The area close to the Stiltsville structures provides good snorkeling opportunities in the seagrass beds. Under the proposed action, boating activity may increase slightly, which could slightly reduce the suitability of the area for snorkeling.
Waterskiing and windsurfing	No effect	Such activities are currently restricted to 100 yards from structures/piers, which would not change. The immediate site would remain unsuitable for these activities. Those wishing to view the site during these activities would not be affected.
Education and interpretation	Moderate beneficial effect	Visitors would have opportunities to learn about and experience significant park resources in ways that currently do not exist.
Birdwatching	Possible negligible to minor beneficial effect	Additional sites for birdwatchers may be created at the site. This could provide enhanced bird viewing opportunities.

Increased traffic to the structures would add to traffic in the Biscayne Channel, resulting in negligible to minor impacts on boaters using the channel as a thoroughfare to the open ocean.

### **Cumulative Effects**

The updated general management plan and fisheries management plan for the park would provide enhancements to the services and resources of Biscayne National Park. Visitor education and interpretation would improve throughout the park, and implementation of the plans would enhance resource protection and the quality of Biscayne Bay's environment. This would increase the high-quality park resources that visitors can enjoy and the services and programs that enhance visitor understanding of the park. Other enhancements to the region's resources are occurring through implementation of the Surface Water Improvement and Management Plan and south Florida ecosystem restoration activities. In association with these activities, an increasing amount of information is flowing to the general public, producing an increase in public understanding and appreciation for the important resources and natural systems of south Florida. Improvements in public access to programs and information at Stiltsville would add to these larger park and regional improvements. Stiltsville could serve as an important location to reinforce efforts to teach the public about the value of the natural environment around them. This would be augmented by opportunities for environmental education and stewardship messages conveyed to area youth. The local community

emphasizes environmental education and awareness through public and private efforts such as the Biscayne Nature Center for Environmental Education and the Maritime and Science Technology High School.

The actions in this alternative would have a moderate to major, cumulative effect. Stiltsville is highly visible in the local community, and successful Stiltsville efforts consistent with regional environmental efforts would receive attention throughout the area.

### **Conclusion**

Implementation of Alternative A would result in long-term, minor to moderate, beneficial effects by providing for a broad range of public uses and opportunities for continued public enjoyment of Stiltsville. Increased presence of park staff would provide enhanced public awareness of Biscayne National Park and long-term, minor to moderate benefits. Long-term, minor to moderate, beneficial effects on visitor health and safety would result from increased staff, additional controls on boating practices, and physical structural and safety improvements to the structures.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

The impacts of Alternative B on visitor use and visitor experience would be similar to Alternative A. Management of the site by the National Park Service would provide the same types of activities and result in similar levels of visitation as under non-profit organization management.

### **Cumulative Effects**

The cumulative effects of Alternative B would be similar to Alternative A.

### **Conclusion**

Implementation of Alternative B would result in long-term, minor to moderate, beneficial effects by providing for a broad range of public uses and opportunities for continued public enjoyment of Stiltsville. Increased presence of park staff would provide enhanced public awareness of Biscayne National Park and long-term, minor to moderate benefits. Long-term, minor to moderate, beneficial effects on visitor health and safety would result from increased staff, additional controls on boating practices, and physical structural and safety improvements to the structures.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

To the extent that the competitive leasing process resulted in a range of uses and a level of visitation similar to Alternative A, the effects on visitor use and experience would be the same. Setting aside one structure for National Park Service use would provide long-term minor to moderate beneficial effects on visitor health and safety through increased staff presence, allowing greater interaction such as additional controls on boating practices. If some or all of the leases were for private and exclusive use, the opportunities for broad public use of the site would be less and the impacts on visitor experience and safety would vary.

Past leaseholders have invited non-profit and civic groups to use the structures a few days or weeks out of the year. The new leases would likely specify that structures used primarily for private purposes would also be made available for public purposes for a portion of the year. Structures leased for private purposes and available for use by environmental educational classes, civic and service organizations, and non-profits would generate moderate beneficial effects for those organizations that use the structures. The general park visitor would have limited opportunity to use or benefit from the structures, and the impact would be negligible.

For those groups and individuals involved in leases for private uses, the opportunity to use facilities within a national park on an exclusive basis would provide moderate to major, long-term, beneficial effects and enable high-quality and distinctive personal experiences while staying at the structure.

Improvements to the structures used for private purposes would also include improved access for handicapped visitors. This would result in moderate benefits to those visitors by enabling them to experience the distinctive and different opportunities associated with visiting the structures.

Structures leased for private purposes would meet the building codes. Railings and decking would be sound, and the structures would be rehabilitated to safely accommodate the specified maximum capacity for the structure. These improvements would produce a minor to moderate improvement on visitor safety.

Private use of structures would present opportunities for activities that, if uncontrolled or unmonitored, could result in safety hazards. This would include consumption of alcohol, excessive boat speeds, or unsupervised swimming by children. Negative effects on visitor safety would be negligible to moderate depending on the nature and composition of the groups using structures.

## **CUMULATIVE EFFECTS**

To the extent that competitive leases resulted in a mix of uses similar to Alternative A, there would be cumulative effects on visitor experience and visitor safety similar to Alternative A. Increases in private use compared to Alternative A would generate community benefits similar to Alternative A but at a reduced level. The cumulative beneficial effects of this alternative, with its higher levels of private use, would be minor. Stiltsville would still be highly visible in the local community, but less focus would be placed on activities and experiences that were consistent with regional environmental efforts than under Alternative A.

## **Conclusion**

Implementation of Alternative C would result in long-term, minor to moderate beneficial effects if a broad range of public uses and opportunities for continued public enjoyment were provided at Stiltsville, similar to Alternatives A and B. Increased presence of park staff would enhance public awareness of Biscayne National Park, with long-term minor to moderate benefits. Long-term minor to moderate, beneficial effects on visitor health and safety would result from increased staff, additional controls on boating practices, and physical structural and safety improvements to the buildings.

If a substantial number of structures were leased for private purposes, only limited public use would take place. Benefits to lessees would be long-term and moderate to major; those to public organizations using the structures would be long-term and moderate. Beneficial impacts on the experience for the general park visitor would be negligible.

Cumulative effects would be similar to Alternative A. If competitive leases result in higher levels of private and exclusive use, the cumulative beneficial effects of the alternative would be less and would be of minor intensity.

### **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

With the structures removed, the open bay environment would be restored. Visitor experiences available in the Safety Valve area would be similar to those available elsewhere in the bay portion of the park. This would include open water boating, fishing in the flats, and swimming and snorkeling from boats. The addition of the area of the former structures for these activities would result in negligible beneficial effects for these visitors because the area occupied by the structures is relatively small and the structures did not substantially limit these activities in the past.

Elimination of the structures may adversely affect some boaters who have used the structures as aids to navigation to and through the Biscayne Channel. However, boaters with the skills and experience necessary for navigation in the bay use the aids of navigation maintained by the U.S. Coast Guard. These would remain as adequate guides for boaters in the channel. The adverse effect to boaters would be negligible and short-term.

Removal of the structures would provide long-term, minor to moderate benefit for those visitors who value and appreciate the natural seascape of the bay. For visitors who boat onto the flats to fish or seek passive experiences, the structures would no longer be a visual intrusion and the noises and activities formerly taking place at the structures would no longer distract from the passive experiences offered by the flats area.

Visitors who appreciate and value Stiltsville as an important component of the Miami viewscape would be adversely effected in the long-term. Effects would be of a minor to moderate intensity. For those visitors who have used the structures in the past or have been closely associated with them, the removal of the structures would result in moderate to major adverse effects. This would eliminate an experience that has been important to many local residents, whether they have been regular visitors, such as former leaseholders, or visitors who have occasionally attended parties, gatherings, or group events at the structures.

Removal of the structures would result in a loss of an opportunity to conduct interpretive or educational programs and to present the history of the area in the unique environment of Stiltsville. While the history of the area can be described in visitor centers at Convoy Point or any other landside location in the park, it could be more effectively described at Stiltsville because the park visitor would be able to appreciate the ambiance of the site first-hand and understand the attraction of the location. This would present a minor adverse affect to the general public or to educational institutions. In the past educational, non-profit and civic groups have used the structures periodically.

All safety hazards presented by the structures would be eliminated and would result in negligible to minor, beneficial effects on visitor safety.

### **Cumulative Effects**

The area that was formerly occupied by the Stiltsville structures would remain set against the backdrop of Key Biscayne and the Miami skyline. High volumes of boating use would also continue within the Biscayne Channel by boaters using this major thoroughfare for access to open water. Therefore,

opportunities to experience a restored natural seascape in this portion of the bay would be in the context of the larger, close-by urban landscape and continued high volumes of boating use. This would result in negligible to minor, beneficial cumulative effects to those who value an experience based on the natural environment.

With high volumes of boating and visitor activity taking place within the park and throughout the water-side part of the metro area, improvements in safety resulting from the removal of the structures would be negligible.

### **Conclusion**

The removal of the structures would result in the loss of an opportunity to present the history of the area in the unique environment of Stiltsville. With implementation of mitigation measures to reduce or avoid disturbance to cultural resources, the demolition activities associated with structure removal would result in long-term negligible to minor adverse impacts. Implementation of Alternative D would result in minor to moderate beneficial effects for visitors seeking quiet passive experiences in the Stiltsville area. The removal of the structures would add negligibly to the amount of open water available for visitor use. Improvements to the natural seascape would offer minor to moderate, beneficial effects for those who appreciate natural settings. For those who have used or have been associated with the structures, long-term adverse effects to their experiences relative to Stiltsville would be moderate to major. Minor, adverse effects would result from the elimination of opportunities for environmental education. Beneficial effects on visitor safety would be negligible to minor. Cumulative effects on visitor experience and safety would be negligible to minor.

## SOUND ENVIRONMENT/SOUNDSCAPE

### METHODOLOGY

Soundscape issues related to personal watercraft identified during scoping included the following:

- Compatibility of noise generated at the Stiltsville structures with the character of a national park.

- Disruptive noise from watercraft accessing the structures.

- Short-term construction noise from renovation or demolition of the Stiltsville structures.

- Protection of the natural soundscape.

- Impacts on submerged soundscape.

- Education about noise and natural soundscape.

Activities associated with use of the structures may affect the natural soundscape both above and below the water. This results from motorized watercraft use, loud social functions, stereos and other audio equipment, generator use, and normal maintenance and upkeep. Should some structures be renovated, construction activities would create periods of loud noise from the use of tools such as saws, pile drivers, and hammers.

Each issue was evaluated using the procedures described in the “General Methodology” section. Impacts on the Biscayne National Park soundscape are subjective and are characterized by each individual's personal opinions and tastes. No measurements of noise or quantified impacts to natural sound are available. The impact analysis is based on qualitative judgments of the effects of human-caused sound in the immediate area of the Stiltsville structures. The intensities of effects on the sound environment and soundscapes were determined using the thresholds in Table 9.

### REGULATIONS AND POLICIES

The fundamental mission of the National Park Service, established by law (16 *United States Code* 1 *et seq.*), is to conserve park natural and historic resources and to provide for the enjoyment of park resources only to the extent that the resources will be left unimpaired for the enjoyment of future generations. As described in Section 1.4.6 of *Management Policies 2001* (NPS 2001b), natural soundscapes are recognized and valued as a park resource in keeping with the National Park Service mission.

The natural soundscape is the aggregate of all of the natural sounds that occur in parks, together with the physical capacity for transmitting natural sounds. Management goals for soundscapes are included in Section 4.9 of *Management Policies 2001* (NPS 2001b) and in *Director's Order #47: Soundscape Preservation and Noise Management* (NPS 2000).

*Management Policies 2001* (NPS 2001b) requires restoration of degraded soundscapes to the natural condition whenever possible, and protection of natural soundscapes from degradation. In Section 4.9, the National Park Service is directed to “take action to prevent or minimize all noise that, through



frequency, magnitude, or duration, adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified as being acceptable to, or appropriate for, visitor uses at the sites being monitored.”

Visitor uses of parks will only be allowed if they are appropriate to the purpose for which a park was established, and can be sustained without causing unacceptable impacts to park resources or values (Sections 8.1 and 8.2 of *Management Policies 2001*). Unless mandated by statute, the National Park Service does not allow visitors to conduct activities that, among other things, unreasonably interfere with “the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.”

*Director’s Order #47: Soundscape Preservation and Noise Management* (NPS 2000) requires, “to the fullest extent practicable, the protection, maintenance, or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources.” It also states that “the fundamental principle underlying the establishment of soundscape preservation objectives is the obligation to protect or restore the natural soundscape to the level consistent with park purposes, taking into account other applicable laws.” Noise is generally considered appropriate if it is generated from activities consistent with park purposes and at levels consistent with those purposes.

Director’s Order #47 provides the following policy direction: “Where natural soundscape conditions are currently not impacted by inappropriate noise sources, the objective must be to maintain those conditions. Where the soundscape is found to be degraded, the objective is to facilitate and promote progress toward the restoration of the natural soundscape.” Where legislation provides for specific noise-making activities in parks, the soundscape management goal would be to reduce the noise to the level consistent with the best technology available, which would mitigate the noise impact but not adversely affect the authorized activity. Where a noise-generating activity is consistent with park purposes, “soundscape management goals are to reduce noise to minimum levels consistent with the appropriate service or activity.”

A key concept for noise management in both *Management Policies 2001* and Director’s Order #47 is the purpose for which a park was established. The establishing legislation for Biscayne National Park states that the park was established “to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty.” Based on this statement, noise generated by recreation, including watercraft, is consistent with park purposes, but noise levels must be within the standards established by National Park Service regulations.

National Park Service regulations pertaining to noise abatement for boating and other water use activities in parks nationwide are included in 36 *Code of Federal Regulations* 3.7. These regulations prohibit operating a vessel on inland waters “so as to exceed a noise level of 82 decibels measured at a distance of 82 feet (25 meters) from the vessel” and specify testing procedures to determine such noise levels. Watercraft that exceed these levels are subject to fine and removal from the park.

Audio disturbances associated with public use and recreation are regulated by the National Park Service under 36 *Code of Federal Regulations* 2.12. These regulations prohibit the use of motorized equipment or machinery above 60 decibels measured at a distance of 50 feet. Noise levels which are deemed unreasonable considering the nature and purpose of the conduct, location, time of day, park’s purpose, and impact on other park users (36 CFR 2.12 (a)(1)(ii)) are also prohibited.

## **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

The effects of Alternative A actions are evaluated against the No Action Alternative D that proposes the permanent removal of all seven structures from Biscayne Bay; therefore, the intensity of impacts of Alternative A are compared to a soundscape that includes all existing human activity in the area with the exception of sounds generated by activities associated with the existing seven Stiltsville structures.

Implementation of this alternative would result in a significant amount of construction activity during the renovation of these seven structures. Regardless of the type of use designation, these seven structures would have to meet existing local and state building codes prior to human occupancy. Also, subsequent to the renovation effort, routine maintenance efforts would be required to maintain the structural integrity of these units. Noise generated from renovation/construction activities and routine maintenance would have a direct, short-term, minor to moderate, adverse effect on the natural soundscape that would be similar to the short-term effects of the no action alternative. However, these adverse effects would be lessened if all seven structures were renovated at the same time and if reasonable time limitations on renovation were stipulated by the administering authority. For example, renovation activities for all seven structures would occur on weekdays within a six-month designated period. Likewise, all future routine maintenance might occur only on designated days of the month and only on weekdays.

The long-term future use associated with these seven structures would be determined only after a feasibility analysis and would potentially range from all public use to all private use, with a range of mixed-use options between the two extremes. The noise level, both for the surface and the submerged soundscape, would vary slightly with the range of potential use options. However, when compared to no action (the elimination of all structures and sounds associated with their use), the noise levels generated by public and/or private boating access and use of the structures in Alternative A would have a direct, long-term, minor to moderate, adverse effect on the natural soundscape. The minor to moderate adverse effect associated with Alternative A would be localized because the structures and associated access and activity represent negligible points of disturbance within the scale and context of the 174,000 acre Biscayne National Park environment.

### **Cumulative Effects**

The potential noise level generated by the seven Stiltsville structures, regardless of their use designation, would have a negligible, adverse, cumulative effect on the natural soundscape because of the moderate, adverse effect of noise already associated with this heavily used urban/marine environment. The natural soundscape associated with this northern portion of Biscayne Bay is presently adversely affected by proximity to the Miami metropolitan area, Miami International Airport traffic, industrial activity, and intensive recreational/commercial boating.

### **Conclusion**

Noise generated from renovation/construction activities and routine maintenance of the seven Stiltsville structures would have a direct but localized, short-term, minor to moderate adverse effect on the natural soundscape that would be similar to the short-term effects of the no action alternative.

The noise level generated by public and private boating access and use of the structures would have a direct but localized, long-term, minor to moderate, adverse effect on the natural soundscape when

compared to the no action alternative that would eliminate the structures and all associated sounds generated by their use.

Alternative A would have a negligible, adverse, cumulative effect on soundscape because of the moderate, adverse effect of noise already associated with this heavily used urban/marine environment.

Alternative A would not result in major adverse impacts on soundscape or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soundscape or values as a result of the implementation of Alternative A.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

The range of potential uses, use levels for the structures, and associated activities would be similar to in Alternative A. The implementation of Alternative B would likely have similar effects on soundscape as Alternative A.

#### **Cumulative Effects**

The cumulative effects of Alternative B would likely be similar to Alternative A.

#### **Conclusion**

Noise generated from renovation/construction activities and routine maintenance of the seven Stiltsville structures would have a direct but localized, short-term, minor to moderate, adverse effect on the natural soundscape that would be similar to the short-term effects of the no action alternative.

The noise level generated by public and/or private boating access and use of the structures would have a direct but localized, long-term, minor to moderate, adverse effect on the natural soundscape when compared to the no action alternative that would eliminate the structures and all associated sounds generated by their use.

Alternative B would have a negligible adverse cumulative effect on soundscape because of the moderate adverse effect of noise already associated with this heavily used urban/marine environment.

Alternative B would not result in major adverse impacts on soundscape or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soundscape or values as a result of the implementation of Alternative B.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

The range of potential uses and associated activities would be generally the same as Alternatives A and B; except that under Alternative C there would be a higher probability that competitive leasing

might result in more exclusive types of use than either Alternatives A or B. Assuming Alternative C would have more exclusive use, there would be fewer visitors than with Alternatives A and B. The implementation of Alternative C would likely have similar effects on the surface and submerged soundscape, both short-term and long-term, as Alternatives A and B, except that the adverse effects on the soundscape would be somewhat less adverse with Alternative C because of fewer people visiting the structures (see Tables 1 and 2). Over all, Alternative C would still have the same direct but localized, minor to moderate, adverse impacts, both short-term and long-term, when compared to the no action demolition alternative.

### **Cumulative Effects**

The cumulative effects of Alternative C would likely be similar to Alternative A.

### **Conclusion**

Noise generated from renovation/construction activities and routine maintenance of the seven Stiltsville structures would have a direct but localized, short-term, minor to moderate, adverse effect on the natural soundscape that would be similar to the short-term effects of the no action alternative.

The noise level generated by public and private boating access and use of the structures would have a direct but localized, long-term, minor to moderate, adverse effect on the natural soundscape when compared to the no action alternative that would eliminate the structures and all associated sounds generated by their use.

Alternative C would have a negligible adverse cumulative effect on soundscape because of the moderate adverse effect of noise already associated with this heavily used urban/marine environment.

Alternative C would not result in major adverse impacts on soundscape or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soundscape or values as a result of the implementation of Alternative C.

## **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

Implementation of Alternative D would have direct, short-term, minor to moderate, adverse effects on soundscape in a localized area during the time demolition of the seven structures was taking place. However, following removal of these structures, there would be a direct, long-term, minor to moderate, beneficial effect in this localized area because noise associated with boating access and use of the structures would be eliminated. Following removal a portion of the natural soundscape would be reclaimed, providing an incremental change toward preserving an intrinsic resource value associated with this nationally significant park resource.

### **Cumulative Effects**

The removal of the seven Stiltsville structures would have a negligible to minor, beneficial, cumulative effect on the natural soundscape because of the moderate adverse effect of noise already associated with this heavily used urban/marine environment. The natural soundscape associated with

this northern portion of Biscayne Bay is presently adversely affected by proximity to the Miami metropolitan area, Miami International Airport traffic, industrial activity, and intensive recreational/commercial boating.

## **Conclusion**

Implementation of Alternative D would have direct, short-term, minor to moderate, adverse effects on soundscape in a localized area while demolition of the seven structures was taking place. However, following removal of these structures there would be a direct, long-term, minor to moderate, beneficial effect in this localized area because noise associated with boating access and use of the structures would be eliminated.

The removal of the seven Stiltsville structures would have a negligible to minor, beneficial, cumulative effect on the natural soundscape because of the moderate adverse effect of noise already associated with this heavily used urban/marine environment.

Alternative D would not result in major adverse impacts on soundscape or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soundscape or values as a result of the implementation of Alternative D.

## VISUAL RESOURCES

### METHODOLOGY

Based on input received during the internal and public scoping processes, the following issues regarding visual resources were developed:

Intrusiveness of Stiltsville on the natural viewshed.

Viewing of watercraft, including ocean-going vessels in the Biscayne Channel, as a site resource from structures near the channel.

View of the Miami skyline, a sight that may be appreciated by school children who seldom get out onto the bay.

Impacts on visual resources were evaluated from two perspectives:

The view *from* the Stiltsville area. While the view from Stiltsville would not change, the numbers and types of visitors who have the opportunity to perceive the view from Stiltsville would vary by alternative.

The view *of* the Stiltsville area. This analysis considers the view of Stiltsville from the land and water. As examples, viewers looking south from Key Biscayne look directly across the Stiltsville area, and boaters using the Biscayne Channel travel through Stiltsville.

Each issue was evaluated using the procedures described in the “General Methodology” section. The analysis of impacts of alternative actions on visual resources is qualitative and reflects the subjective nature of individual opinions and tastes. The impacts to the visual resources and aesthetic quality of the area surrounding Stiltsville was determined by researching and reviewing public comments and the general community response to the Stiltsville area. The intensities of effects on visual resources were determined using the criteria in Table 9.

### REGULATIONS AND POLICIES

The National Park Service has not developed a visual resource management system for public lands under its jurisdiction; however, the overriding management purpose in a park is preservation of all significant resources, including the scenery. The National Park Service Organic Act states that one of the fundamental purposes of a national park is “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in a such a manner and by such means as would leave them unimpaired for the enjoyment of future generations.”

Federal agencies are required by the National Environmental Policy Act of 1969 to take into consideration the effects of proposed federal actions on the human environment. Aesthetics are also identified by the Council on Environmental Quality regulations as an environmental factor that must receive consideration in determining the effects of a federal action. Title 23 *United States Code*. 109(h) and Technical Advisory T 6640.8A cite the aesthetic effect of proposed projects as an issue that must be fully considered in the preparation of environmental documents.

## **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

The effects of Alternative A are evaluated against the no action Alternative D that proposes the permanent removal of all seven structures from Biscayne Bay; therefore the intensity of impacts of Alternative A are compared to all existing natural and man-made components of this land/seascape with the exception of the structures and visible activities associated with Stiltsville.

Implementation of Alternative A would retain the Stiltsville structures and some level of associated uses. The effects of retaining, renovating, maintaining and using these structures (common to Alternatives A, B, and C) on the visual resource would be subjective, depending on an individual's perception and values. Although Stiltsville has been part of this visual resource for over 60 years, the retention of these structures would be considered an addition to the seascape scene when compared to the no action alternative. However, within the context of this large, developed, bay ecosystem, the presence or absence of this relatively small Stiltsville site would have a negligible to minor effect on the visual resource. Also, the variation of potential uses represented by this alternative would be discernible but would represent a negligible effect within this larger visual context. In the short term, the renovation of these structures would have direct, negligible to minor, adverse effect on the visual resource because of construction activities. In the long-term, the retention and use of these seven structures would have a direct and localized, negligible, adverse or beneficial effect, depending on the perception and values of the individual viewing the scene.

### **Cumulative Effects**

Depending on the values and interests of each visitor, the Stiltsville structures could have a beneficial or adverse incremental effect on the visual resource. Some might interpret Stiltsville as a desirable indicator of what is necessary to support the park's mission in providing education and recreation opportunities. Others might interpret Stiltsville as a visual encroachment or intrusion on this visual seascape scene. Because Stiltsville represents a relatively small-scale development in the middle of a much larger and already heavily impacted urban coastal environment, it is unlikely that these structures and associated activities would be generally considered more than a negligible or minor, adverse cumulative effect on the visual resource.

### **Conclusion**

The presence or absence of these structures provides the basic distinction for the visual resource effect. The continued presence and potential variation of uses represented by this alternative would be discernible but would represent a negligible effect within this larger visual context of this already heavily impacted urban coastal environment. In the short-term, the renovation of these structures would have direct, negligible to minor adverse effect on the visual resource because of the construction activities. In the long-term, the retention and use of these seven structures would have a direct and localized, negligible, adverse or beneficial effect, depending on the perception and values of the individual viewing the scene.

Because Stiltsville represents a relatively small-scale development in the middle of a much larger and already heavily impacted urban coastal environment, it is unlikely that Stiltsville and associated uses would be generally considered more than a negligible or minor, adverse, cumulative effect on the visual resource.

Alternative A would not result in major adverse impacts on visual resource values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of the visual resource values as a result of the implementation of Alternative A.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

The implementation of Alternative B would have similar effects on visual resources as Alternative A.

#### **Cumulative Effects**

The cumulative effects of Alternative B would be similar to Alternative A.

#### **Conclusion**

The presence or absence of these structures provides the basic distinction for the visual resource effect. The continued presence and potential variation of uses represented by this alternative would be discernible but would represent a negligible effect within the larger visual context of this already heavily impacted urban coastal environment. In the short-term, the renovation of these structures would have a direct, negligible to minor, adverse effects on the visual resource because of the construction activities. In the long-term, the retention and use of these seven structures would have a direct and localized, negligible, adverse or beneficial effect, depending on the perception and values of the individual viewing the scene.

Because Stiltsville represents a relatively small-scale development in the middle of a much larger and already heavily impacted urban/coastal environment, it is unlikely that Stiltsville and associated uses would be generally considered more than a negligible or minor, adverse cumulative effect on the visual resources.

Alternative B would not result in major adverse impacts on a visual resource values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of the visual resource values as a result of the implementation of Alternative B.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

The implementation of Alternative C would likely have similar effects on visual resources as Alternative A.

#### **Cumulative Effects**

The cumulative effects of Alternative C would be similar to Alternative A.



## **Conclusion**

The presence or absence of these structures provides the basic distinction for the visual resource effect. The continued presence and potential variation of uses represented by this alternative would be discernible but would represent a negligible effect within this larger visual context of this already heavily impacted urban coastal environment. In the short-term, the renovation of these structures would have direct, negligible to minor adverse effect on the visual resource because of the construction activities. In the long-term, the retention and use of these seven structures would have a direct and localized, negligible, adverse or beneficial effect, depending on the perception and values of the individual viewing the scene.

Because Stiltsville represents a relatively small-scale development in the middle of a much larger and already heavily impacted urban coastal environment, it is unlikely that Stiltsville and associated uses would be generally considered more than a negligible or minor, adverse cumulative effect on the visual resource.

Alternative C would not result in major adverse impacts on visual resource values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of the visual resource values as a result of the implementation of Alternative C.

## **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

Implementation of Alternative D would require removal of the seven Stiltsville structures. In the short-term, the removal of these structures would have direct, negligible to minor adverse effect on the visual resource because of the intrusion caused by demolition activities. In the long-term, the removal of these seven structures would have a direct and localized, negligible to minor, beneficial or adverse effect, depending on the perception and values of the individual viewing the scene. However, when considering effect solely on the intrinsic value of the visual resource from the perspective of the park's mission, the impact of removing these non-historic structures would have a direct, long-term, negligible to minor beneficial effect, allowing a small portion of the bay to return to natural conditions.

## **Cumulative Effects**

Because Stiltsville represents a relatively small-scale development in the middle of a much larger and already heavily impacted urban coastal environment, it is unlikely that the removal of Stiltsville and associated uses would be generally considered more than a negligible to minor, beneficial cumulative effect on the visual resource.

## **Conclusion**

In the short-term, the removal of these structures would have direct, negligible to minor adverse effect on the visual resource because of the intrusion caused by demolition activities. In the long-term, the removal of these seven structures would have a direct and localized, negligible to minor, beneficial or adverse effect, depending on the perception and values of the individual viewing the scene. However, when considering effect solely on the intrinsic value of the visual resource from the perspective of the

park's mission, the impact of removing these structures would have a direct, long-term, negligible to minor beneficial effect, allowing a small portion of the bay to return to natural conditions.

Because Stiltsville represents a relatively small-scale development in the middle of a much larger and already heavily impacted urban coastal environment, it is unlikely that the removal of Stiltsville and associated uses would be generally considered more than a negligible to minor beneficial cumulative effect on the visual resource.

Alternative D would not result in major adverse impacts on visual resource values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of the visual resource values as a result of the implementation of Alternative D.

## **PARK OPERATIONS**

### **METHODOLOGY**

This section evaluates the effects on operations of the park, including efficiencies and effectiveness of the park staff's ability to manage the park in accordance with the purpose of the park and the laws and mandates that direct its management.

Through the scoping process, the following issues were identified regarding the effect of alternative actions on park operations:

An improvement to existing facilities and an increase in visitor services would increase demands on park operations.

Continued use of the structures may result in a need for a base for park operations in the northern portion of Biscayne National Park.

Continuing use of the structures may result in changes in service needs.

An increase in staff may be necessary to provide effective enforcement of National Park Service regulations, protect park resources in the area, and educate the public.

Retaining the Stiltsville structures would involve rehabilitation, maintenance, and operation costs, which could necessitate funding from alternate sources.

Having an National Park Service presence in the northern portion of the park would require adequate administrative space.

Each of these issues was evaluated using the procedures described in the "General Methodology" section. Impacts on park operations were evaluated based on information gathered from National Park Service documents and interviews with park personnel specialists, division chiefs, and program managers. Estimates of impacts on park operations resulting from alternative actions was determined using best professional judgment. The intensities of effects on park operations were determined using the criteria in Table 9.

### **REGULATIONS AND POLICIES**

Actions related to the various alternatives that affect park operations include the maintenance of the Stiltsville structures and the development and implementation of an education/interpretation program to enhance public awareness of the history and unique ecosystem associated with the area.

*Management Policies 2001* (National Park Service 2001b) guide maintenance activities in park units (Section 9.1.4.1). These policies state that the "Service will conduct a program of preventive and rehabilitative maintenance and preservation to (1) provide a safe, sanitary, environmentally protective, and esthetically pleasing environment for park visitors and employees; (2) protect the physical integrity of facilities; and (3) preserve or maintain facilities in their optimum sustainable condition to the greatest extent possible. Preventive and rehabilitative maintenance programs will incorporate sustainable design elements and practices to ensure that water and energy efficiency, pollution prevention, and waste prevention and reduction are standard practice."

Guidelines for interpretation and educational programs are also provided in National Park Service *Management Policies* (Chapter 7). These guidelines direct the National Park Service to disseminate to the public the history and significance, the resources, and the mission goals of the park. In instances when park managers are called upon to make difficult resource decisions that may be highly controversial, the interpretive and educational programs can build public understanding of, and support for, such decisions and initiatives and for the National Park Service mission in general. National Park Service *Management Policies* 2001 (Section 7.5.3) direct that “parks should, in balanced and appropriate ways, thoroughly integrate resource issues and initiatives of local and Service-wide importance into their interpretive and educational programs.” Policies also state that “resource issue interpretation should be integrated into both on- and off-site programs, as well as into printed and electronic media whenever appropriate” (Section 7.5.3).

### **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

Implementation of Alternative A would require an increased National Park Service presence in the northern portion of the park to liaison with the Stiltsville non-profit organization management staff and to monitor user activities. This may include the option of rehabilitating one stilt structure to serve as a small National Park Service satellite with a ranger office and interpretive contact center, a maintenance and storage area, and a boat dock. It would also involve an associated seven percent increase in staffing level, with two new permanent onsite staff and three new part-time offsite staff. If implemented, the estimated cost would have a direct, long-term, negligible to minor adverse effect on park operations due to the increased financial burden on the park to provide: 1) capital development costs of rehabilitating a stilt structure for National Park Service use; 2) permanent additional National Park Service staff to manage and maintain this satellite office operation; and 3) additional equipment needs (new patrol boats/associated support maintenance). This effect would be upgraded to direct, long-term, minor adverse effect if this alternative also exercised the option of having an additional mainland National Park Service support facility with staff to back up the stilt structure satellite office. However, if implementation of these actions takes place, Alternative A would improve law enforcement, visitor and resource protection, and public health and safety functions, and would decrease response time to the northern portion of the park, providing a direct, minor beneficial effect because of the slightly increased long-term National Park Service presence in this portion of the park.

### **Cumulative Effects**

Alternative A would have a direct, long-term, minor, beneficial cumulative effect on park operations when compared to Alternative D, the no action alternative, because of the small scale increased National Park Service presence and slightly improved capability of National Park Service staff to manage the external demands placed on park operations by ever-increasing visitation, park proximity to the expanding and highly urbanized environment of the Miami metropolitan area and associated attendant impacts, and the increased partnering with other stakeholder interests to manage this highly complex coastal ecosystem.

### **Conclusion**

Alternative A would have a direct, long-term, negligible to minor, adverse effect on the financial and staffing component of park operations because of the development, operation, maintenance, and staffing costs associated with the rehabilitation and use of a stilt structure as a satellite park ranger office and interpretive contact facility. However, if staff and facility increases occur, Alternative A would improve law enforcement, visitor and resource protection, and public health and safety

functions, and would and decrease response time to the northern portion of the park, providing a direct, minor beneficial effect because of the increased long-term National Park Service presence in this portion of the park.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

The National Park Service commitment to rehabilitate the seven Stiltsville structures and the development of a National Park Service mainland administrative, operations, and maintenance center would require a commitment of federal funds for design and construction.

This cost of rehabilitation might be defrayed somewhat if selected user organizations were receptive to assuming the costs of rehabilitation if accompanied by an incentive package that might include longer-term leases, National Park Service maintenance of structures, or National Park Service approval of an organization charging user fees. Rehabilitation costs might also be defrayed if concession contracts required concessioners to agree to rehabilitate and maintain the structures. An incentive to waive the concession franchise fee for a negotiated period would allow concessioners to recoup the capital development costs of rehabilitating and maintaining the stilt structures. Likewise, the National Park Service might consider Incidental Business Permits (activities or services that are initiated outside the park but take place in the park) to lessen the National Park Service burden to provide activities and services generated by the use of the Stiltsville structures.

This alternative would also increase the burden on National Park Service administration and management, who would develop the criteria and manage the selection of users for the Stiltsville structures. This burden on park operations might be somewhat reduced, if the selection resulted in uniform types of users and activities that meshed with the park's mission.

This alternative would likely require the National Park Service to develop an administrative and maintenance support facility with a bay-front docking and staging area (leased or new construct facility) on the adjacent mainland to handle the rehabilitation, long-term maintenance, and management of the Stiltsville operation. This long-term National Park Service commitment to manage and maintain Stiltsville would require a seven percent increase in staffing levels and additional equipment (e.g., ranger boats, vehicles, radios) to meet these new operational needs.

Alternative B would have a direct, long-term, moderate adverse effect on National Park Service operations by substantially increasing both the financial and staffing burden on National Park Service operations because of the potential full-range commitment of the National Park Service to provide the rehabilitation, maintenance, and management of all seven Stiltsville structures. This alternative would maximize the National Park Service presence in this heavily used northern portion of the park and would have a direct, long-term, moderate beneficial effect, allowing reduced response time for emergencies, improved monitoring for better resource protection needs, and the expansion of law enforcement, visitor protection, and public health and safety functions in the northern portion of the park.

### **Cumulative Effects**

Alternative B would have a direct, long-term, moderate, beneficial cumulative effect on park operations when compared to Alternative D because of a substantially increased National Park Service presence and significantly improved capability of National Park Service staff to manage the external

demands placed on park operations by ever-increasing visitation, park proximity to the expanding and highly urbanized environment of the Miami metropolitan area and associated attendant impacts, and the increased partnering with other stakeholder interests to manage this highly complex coastal ecosystem.

## **Conclusion**

Alternative B would have a direct, long-term, moderate adverse effect on National Park Service operations by substantially increasing both the financial and staffing burden on National Park Service operations because of the potential full-range commitment of National Park Service staff to provide the rehabilitation, maintenance, and management of all seven Stiltsville structures. This alternative would maximize the National Park Service presence in the heavily used northern portion of the park and would have a direct, long-term, moderate beneficial effect, allowing reduced response time for emergencies, improved monitoring for better resource protection needs, and the expansion of law enforcement, visitor protection, and public health and safety functions in the northern portion of the park.

## **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

Impacts of Alternative C would be similar to those of Alternative A with respect to the costs of rehabilitation, assuming that the leases would require lessees to cover the cost of stilt structure rehabilitation. National Park Service development costs for any structures to be used by National Park Service would also be similar to Alternative A. Although fewer users per day would be expected under Alternative C, this would probably not alter National Park Service staffing needs as compared to Alternative A, because National Park Service would have an increased administrative staff burden for developing the criteria for selecting lessees, implementing and managing the lease selection process, and monitoring and managing the long-term competitive lease program. Also, the burden on park operations might be slightly increased, since there is a higher probability for “exclusive users” in Alternative C, potentially requiring more intensive monitoring. If on-site staff and facility options were implemented, Alternative C would have a direct, long-term, minor adverse effect on park operations due to the capital development costs associated with rehabilitation of stilt structures used for National Park Service purposes, as well as increased costs of additional National Park Service staff necessary to monitor users and manage the competitive lease program. The effects of Alternative C are similar to Alternative A with the exception of the increased burden of National Park Service initiation and long-term management of the competitive lease program. However, if National Park Service on-site options are implemented, Alternative C would improve law enforcement, visitor and resource protection, and public health and safety functions, and would decrease response time to the northern portion of the park, providing a direct, minor beneficial effect because of the slightly increased long-term National Park Service presence in this portion of the park.

## **Cumulative Effects**

Alternative C would have a direct, long-term, minor, beneficial cumulative effect on park operations when compared to Alternative D because of the small scale increased National Park Service presence and slightly improved capability of National Park Service staff to manage the external demands placed on park operations by ever-increasing visitation, park proximity to the expanding and highly urbanized environment of the Miami metropolitan area and associated attendant impacts, and the increased partnering with other stakeholder interests to manage this highly complex coastal ecosystem.

## **Conclusion**

Alternative C would have a direct, long-term, minor adverse effect on park operations due to the capital development costs associated with rehabilitation of stilt structures used for National Park Service purposes as well as increased costs of additional National Park Service staff necessary to monitor users and manage the competitive lease program. If staff and facility increases occur, Alternative C would improve law enforcement, visitor and resource protection, and public health and safety functions, and would decrease response time to this portion of the park, providing a direct, minor beneficial effect because of the slightly increased long-term National Park Service presence in this northern portion of the park.

## **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

The removal of the seven Stiltsville structures would have a direct, long-term, moderate beneficial effect on the financial component of National Park Service park operations because this action would eliminate any future need to expend National Park Service funds to renovate or preserve these structures. Likewise, this action would eliminate the need to provide additional staffing to manage any future use that might be considered for these structures. However, there might be a potential direct, short- and long-term, moderate adverse effect on law enforcement, visitor and resource protection, and public health and safety park operation functions in this northern portion of the park, if the National Park Service were to forego the opportunity for an increased presence in this portion of the park due to the removal of these seven structures.

## **Cumulative Effects**

Alternative D would have a direct, long-term, minor to moderate, adverse cumulative effect on park operations because of the potential for minimal National Park Service presence in this northern portion of the park. The potential for a limited National Park Service presence would seriously hamper the National Park Service's ability to manage the external demands placed on park operations by ever-increasing visitation, park proximity to the expanding and highly urbanized environment of the Miami metropolitan area and associated attendant impacts, and the increased partnering with other stakeholder interests to manage this highly complex coastal ecosystem.

## **Conclusion**

The removal of the seven Stiltsville structures would have a direct, long-term, moderate beneficial effect on the financial component of National Park Service park operations because this action would eliminate any future need to expend National Park Service funds to renovate or preserve these structures. Likewise, this action would eliminate the need to provide additional staffing to manage any future use that might be considered for these structures. However, there might be a potential direct, short and long-term, moderate adverse effect on law enforcement, visitor and resource protection, and public health and safety park operation functions in the northern portion of the park, if the National Park Service were to forego the opportunity for an increased presence in this portion of the park due to the removal of these seven structures.

## **SOCIOECONOMICS**

### **METHODOLOGY**

The impact analysis evaluates two separate socioeconomic areas including tourism and recreation, and the local and regional economy. A quantitative analysis was not conducted because the additional cost of that analysis was not considered reasonably related to the expected increase in the quantity or quality of relevant information. Due to the conceptual nature of the plan, the National Park Service believes that a qualitative analysis provides sufficient assessment of all relevant socioeconomic impacts associated with this decision-making. Therefore, professional judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts.

Economic effects of the four alternatives for managing Stiltsville were evaluated based on the following issues identified during internal and public scoping processes:

The alternative actions would have different effects on tourism related to visitation or economic activities associated with park use.

Commercial boat operators may be economically affected by alternatives that involve the development of education and the interpretive centers.

Changes in visitation or use of the structures may affect local retailers that supply services and goods, such as fuel sales or refreshments, to visitors and construction workers.

Each of these issues was evaluated using the procedures described in the “General Methodology” section. The intensities of effects on socioeconomics were determined using the criteria in Table 9.

### **REGULATIONS AND POLICIES**

Evaluation of social and economic impacts are directed by 40 *Code of Federal Regulations* 1500, Regulations for Implementing the National Environmental Policy Act.

### **IMPACTS OF ALTERNATIVE A (MANAGED BY A NON-PROFIT ORGANIZATION)**

Current trends in contributions to the county and regional economy by tourists and local recreational users would likely continue. The service and retail trade industries would be expected remain in the top employment sectors of the county and regional economy. The number of jobs generated under Alternative A to staff the structures or a satellite location for the National Park Service would be considered negligible. The increase of three permanent and two part-time jobs generated directly from continued use of the structures under the Stiltsville non-profit organization would represent less than 0.1 percent of the year 2001 employment of the county (1,005,810; <http://recenter.tamu.edu/Data/empc/LAUCN120860.htm>). Continuing management of the Stiltsville site would produce no adverse or beneficial effects to the regional economy.

Educational exhibits, ranger activities, and locations for group gatherings may generate a minor increase in recreational usage of the park as a whole. Increased park usage would provide corresponding increases in business activity at marinas and boat launches providing access to the park. Use of structures may result in localized increases in expenditures for fuel, food, beverages, and



recreational equipment at retail businesses associated with marinas. Retailers would probably experience local negligible to minor beneficial effects of increased sales compared to the no action alternative.

The mix of uses proposed for the structures might result in a change in the distribution of visitor expenditure in the area compared to the current condition in which the expenditures by private leaseholders may be more widely distributed. Many of the uses proposed for the structures would likely result in use of the structures by groups, which may result in a concentration of spending at a few marinas as opposed to spread out around the bay. However, the number of visitors to Stiltsville who would support local businesses in the area, up to 25,000 under Alternative A, would be negligible compared to the number of people who visit Biscayne National Park itself (442,585) and the number of registered boats (550,660) in the region. Organization management of the structures under this alternative would result in A negligible adverse impact on individual businesses.

This alternative would probably not affect park-associated economic activities. Due to the shallow nature of the site, no commercial or significant sport-fishing activities are pursued in direct connection to Stiltsville. Alternative A would not affect economic activities associated with fishing. The Stiltsville site is not suitable for scuba diving, so commercial diving services would not be affected by the proposed action. Waterskiing and windsurfing activities are currently restricted to 100 yards from structures and piers, and this would not change with implementation of Alternative A. There would be no adverse or beneficial effects to businesses serving the park.

With this alternative, access to some of the structures would be limited to vessels operated by licensed commercial operators or licensed operators employed by the organization providing use of the structures. This requirement would result in an increase in business for those commercial operators within the bay area. The use of commercial boat operators to provide visitor access to the structures would displace some private entities that use their own vessels to access the structures under the current conditions. Because these individuals would probably continue to use their watercraft in the area, there would probably not be a noticeable decline in use of amenities in the bay area by these people; new users to the site would likely offset any reduction in expenditures.

The mix of public uses proposed under Alternative A would provide socioeconomic benefits by increasing opportunities for the public to use the structures. This alternative would provide for broad public access to the structures, which were previously accessible only to leaseholders. Because of the expense of owning and operating a boat, a large segment of the Miami metropolitan area has little opportunity to experience the bay's resources. This alternative would provide an opportunity for groups with limited funding and individuals with limited economic resources to use the structures and learn about the bay environment. The increased access to the general public through development of education facilities and visitor/interpretive centers would increase public awareness and understanding of the history and ecology of the Stiltsville area. Compared to the no action alternative, in which the structures would be removed, the long-term impacts of providing a wider range of opportunity to access the area would be beneficial and minor.

During implementation of the action, a negligible to minor, highly localized, beneficial economic effect would be generated by construction activities. The construction laborers working on renovating the structures within the park may require lodging in the vicinity. Food and other retail shopping by these laborers would probably occur in the local communities.

### **Cumulative Effects**

No cumulative impacts would be expected by implementing Alternative A.

### **Conclusion**

Implementing Alternative A would have long-term, negligible to minor beneficial effects to the local economy. There would be no adverse or beneficial effects to concessions within the park. The mix of public uses proposed under Alternative A would provide long-term, minor socioeconomic benefits by increasing the opportunities for the public, including the economically disadvantaged, to access the structures and gain an appreciation of park resources.

### **IMPACTS OF ALTERNATIVE B (NATIONAL PARK SERVICE MANAGEMENT FOR PUBLIC USE)**

Alternative B would result in National Park Service management and development of the structures to provide a broad mix of uses similar to Alternative A. The socioeconomic effects therefore would be similar to those described above for Alternative A.

### **Cumulative Effects**

No cumulative impacts would be expected by implementing Alternative B.

### **Conclusion**

Implementing Alternative B would have long-term, negligible to minor beneficial effects to the local economy. There would be no adverse or beneficial effects to concessions within the park. The mix of public uses would provide long-term, minor socioeconomic benefits by increasing the opportunities for the public, including the economically disadvantaged, to access the structure and gain an appreciation of park resources.

### **IMPACTS OF ALTERNATIVE C (COMPETITIVE LEASING FOR PUBLIC USE)**

This alternative would result in the structures being leased for private use for purposes similar to the range of uses defined in Alternative A as well as for private uses similar to those under the former non-renewable leases. Some of the structures could be used for park mission purposes, depending upon the proposals received. As described for Alternative A, the continued use of the Stiltsville structures would produce no adverse or beneficial effects to the regional economy.

Competitive leasing of the structures under this alternative may result in lower annual use of the area and less need for commercial boat operators compared to Alternatives A or B. The beneficial economic effects associated with this alternative therefore would be less than those described above for Alternatives A or B. Private leaseholders and their guests would likely generate a negligible increase in recreational use of the park as a whole and a negligible increase in corresponding spending at local businesses. Use of structures may result in localized increases in expenditures for fuel, food, beverages, and recreational equipment at retail businesses associated with marinas. Retailers would probably experience local negligible beneficial effects of increased sales compared to the no action alternative.

As with Alternative A, this alternative would probably not affect park-associated economic activities such as fishing, waterskiing or windsurfing, or scuba diving. There would be no adverse or beneficial effects to concessions within the park.

Use of the structures could be limited to leaseholders and their guests, thereby reducing a broad range of public use of the structures that would support the park mission. Compared to Alternatives A or B, there would be limited opportunity for the public, in particular the economically disadvantaged segment of the population, to learn about and experience this unique marine environment. However, compared to the no action alternative, in which structures would be eliminated, this alternative could result in negligible beneficial socioeconomic impacts, depending upon the number of structures that were used for park mission type purposes.

As with Alternatives A and B, construction activities during implementation of the action would generate a negligible to minor, highly localized, beneficial economic effect. The construction laborers working on renovating the structures within the park may require lodging in the vicinity. Food and other retail shopping by these laborers would probably occur in the local communities.

### **Cumulative Effects**

No cumulative impacts would be expected by implementing Alternative C.

### **Conclusion**

Implementing Alternative C would have long-term, negligible to minor, beneficial effects to the local economy compared to the no action alternative. There would be no adverse or beneficial effects to concessions within the park. Compared to the no action alternative, Alternative C could result in long-term negligible socioeconomic benefits from increased opportunities for the public, including the economically disadvantaged, to access the structure and gain an appreciation of park resources.

### **IMPACTS OF ALTERNATIVE D (REMOVAL OF STRUCTURES)**

This alternative would result in the structures being demolished, with their use therefore eliminated. The many Stiltsville visitors, including former leaseholders, are residents of the region, and their use of the bay area would probably continue regardless of the presence or absence of the Stiltsville structures. Therefore, no effects on retailers within the local area are expected from implementation of Alternative D.

Due to the nature of the site and regulations in place to protect resources from recreational activities such as fishing, windsurfing or waterskiing, or scuba diving, this alternative would probably not affect park-associated economic activities. There would be no adverse or beneficial effects to concessions within the park.

Removal of the structures would eliminate any opportunities to provide public understanding of the history and ecology of the area. Compared to the other alternatives, this alternative would have a long-term, minor, adverse socioeconomic effect by eliminating the opportunity for a unique learning experience by all segments of the population.

Removal of the structures would have a negligible to minor, highly localized, beneficial economic effect resulting from demolition activities during removal of the structures. The laborers working on

removing the structures may require lodging in the vicinity. Food and other retail shopping by these laborers would probably occur in the local communities.

### **Cumulative Effects**

No cumulative impacts are expected with implementation of the no action alternative.

### **Conclusion**

Removal of the structures would have a short-term, negligible to minor, beneficial effect on local business related to construction activity. There would be no adverse or beneficial effects to concessions within the park. Removal of the structures would eliminate the opportunity for public use and educational opportunities to increase public awareness of the history and ecology of the area. This would result in long-term minor adverse socioeconomic effects compared to the other alternatives.

## **SUSTAINABILITY AND LONG-TERM MANAGEMENT**

### **THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

The intent of this determination is to identify whether the proposed action would trade the immediate use of the land or resources for any long-term management possibilities, adversely affecting the productivity of resources in the Stiltsville area or Biscayne National Park. This determination also discloses whether the actions associated with the alternatives would be a sustainable action that could continue over the long-term without environmental problems (National Park Service 2001b).

None of the alternatives would result in substantial loss or impairment of natural resources or values in the area as a consequence of their implementation. Long-term productivity in the vicinity of Stiltsville is related primarily to the seagrass beds and the shallow-water communities they support. This marine ecosystem is adapted to extreme wind and wave action, which periodically causes the localized removal of vegetation and the disturbance of shallow substrate. If the source of a disturbance is removed, the vegetation naturally is reestablished to the extent that, after a couple of decades, the aquatic community is indistinguishable from that occurring in adjacent areas.

Some of the best evidence of the ability of the seagrass beds to recover occurs at the sites of the former Stiltsville structures. As described in "Purpose and Need for the Plan," Stiltsville included 27 buildings in 1960. Some of those facilities were operated as commercial clubs that had heavy traffic, which would have resulted in numerous boat groundings. During that period, there were few if any controls on disposal of chemical or human wastes, and the bay did not enjoy the protection afforded from national park designation. As a result, these buildings would have had effects that were similar to or greater than those from the current structures. Despite these conditions, little if any evidence can be found from the structures that were removed prior to Hurricane Andrew, or the routes to them. Most of the sites of structures that were removed in 1992 following Hurricane Andrew can still be distinguished, but revegetation of these sites is occurring.

Because of the ability of the seagrass beds to recover, none of the alternatives would affect the long-term productivity of Biscayne Bay in the vicinity of Stiltsville. All of the alternatives would include measures to protect the bay's vegetation and substrate. In the short-term, these management actions would limit the areal extent of disturbance of vegetation and the bay bottom. Because all of the alternatives eventually would result in the removal of Stiltsville's structures, all of the sites eventually would return to levels of productivity similar to those that occurred before Stiltsville's structures were built.

### **ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES THAT WOULD BE INVOLVED SHOULD THE ALTERNATIVE BE IMPLEMENTED**

The intent of this determination is to identify whether an alternative would result in effects or impacts that could not be changed over the long-term or would be permanent. An effect to a resource would be irreversible if the resource could not be reclaimed, restored, or otherwise returned to conditions that existed before the disturbance. An irretrievable commitment of resources involves the effects to resources that, once gone, cannot be replaced or recovered (National Park Service 2001b).

There would not be any irretrievable commitment of park resources. Irreversible commitment of resources would include the destruction of nonrenewable submerged cultural resources from construction or demolition activities, storm-caused debris impacting resources on the bay bottom; or grounding or propeller dredging by boats improperly navigating around the structures. Under all alternatives, taking appropriate mitigation measures to avoid these or other impacts (including exposure from construction or visitor vessel access or physical damage from construction activities) should reduce or avoid any impacts.

Repair of the existing structures would require the irreversible and irretrievable commitment of timber, hardware, and other building materials. These materials are readily available, and they are not considered a limited resource. This sort of commitment would occur with any building project, and would have a negligible effect.

The operation of boats accessing Stiltsville would result in the irreversible and irretrievable commitment of hydrocarbon fuels. However, it is likely that if Stiltsville were not available, these or other boats would be operated for a similar amount of time to access other features in the bay area. Therefore, the alternatives would have a negligible effect on fuel consumption. In addition, hydrocarbon fuels are readily available and do not currently represent a limited resource.

#### **ANY ADVERSE IMPACTS THAT CANNOT BE AVOIDED SHOULD THE ACTION BE IMPLEMENTED**

Unavoidable adverse impacts are those environmental consequences of an action that cannot be avoided, either by changing the nature of the action or through mitigation if action is taken. Therefore, they would remain throughout the duration of the action.

Unavoidable impacts would occur under Alternatives A, B, and C from continued watercraft access to the structures.

Water quality would be adversely impacted by emission of pollutants from watercraft.

As boats continued to access the structures, the potential for adverse impacts to seagrass from watercraft groundings and propeller scarring would still exist.

The presence of the structures would continue to shade the underlying bay bottom and prevent the reestablishment of seagrasses.

The impacts to seagrass and the noise generated from watercraft would continue to affect wildlife that use the area for forage and breeding.

The potential for watercraft groundings and disturbance to the bay bottom could result in the exposure of submerged cultural resources, increasing their vulnerability to wave action and vandalism.

Noise generated by watercraft activity and use of the structures would continue unavoidable adverse effects to the natural soundscape and the experience for some visitors.

Demolition of the structures under Alternative D, and visitor use of the area and construction activities associated with Alternatives A, B, and C would reduce the relative availability of these historic resources for future interpretation and development.

## CONSULTATION AND COORDINATION

### HISTORY OF PUBLIC INVOLVEMENT

*The Stiltsville Advisory Committee:* As directed by the National Park System Advisory Board, the Stiltsville Advisory Committee was established in January 2001 to identify and recommend appropriate future public uses of Stiltsville, and to develop and recommend decision trees to guide the future operation of the seven stilt structures in Biscayne National Park in southeast Florida. Advisory Board member, Marie Ridder was selected by Chairman John Hope Franklin to head the Stiltsville committee. Elected officials, the legal representatives of the private leaseholders, the National Park Service, and Ms. Ridder nominated individuals from the community to be appointed by Chairman Franklin. All 21 nominations received were appointed to the Stiltsville committee.

In an effort to understand the issues involved in recommending future public use of the seven stilt structures, the committee met on March 19, 2001 for an orientation of Biscayne National Park and a site visit to Stiltsville. The committee also met on March 20 and 21 and again on May 15, 2001. All meetings were open to the public and announced via a direct mailing to over 900 people, news stories, and a letter to the Miami Herald Editor with an open invitation. An open house session was held on the evening of March 20, 2001 to encourage public participation and comment as to appropriate public uses of the Stiltsville structures. An e-mail address was created to accept electronic comments and the park accepted faxed comments on behalf of the committee.

The committee reviewed the input from the National Park Service, the members of the committee, and comments and suggestions from the public. They considered several scenarios for the future of Stiltsville, including mothballing and removing the structures, but the committee came to the unanimous decision that the existence of the structures and the surrounding environment is a critical area and important to the citizens of south Florida and all visitors of the Biscayne National Park.

Building upon the March 2001 meetings, the National Park System Advisory Board chaired two subsequent meetings of the Stiltsville Advisory Committee on May 4 and 5, 2002, in Miami, Florida. The meetings were open to the public and notification included sending notices to the park's mailing list announcing the committee meetings, and both website and newspaper notifications. The purpose of the meetings was to develop a preferred alternative for the use and management of Stiltsville that would amend the park's existing general management plan.

The May 27, 2002 meeting with the National Park Service Advisory Board was held via telephone. A notice of the meeting was placed in the *Federal Register* and open to the public. The Board called in from locations around the country. The purpose of the meeting was to allow the Board to discuss and vote on the recommendations that the Committee had made at the May 4 and 5 meetings. The Board approved the May 5 recommendations of the Committee.

A public meeting was held on May 27, 2002 at the park's headquarters in Homestead, Florida, and teleconferenced with the National Park System Advisory Board in Washington, D. C. The purpose of this meeting was to receive and discuss the final report of the Stiltsville Committee submitted one year earlier. Public comment was welcomed and noted.

*Public Scoping Meetings:* Two public scoping meetings were held to solicit comments for the development of the general management plan amendment and environmental impact statement for managing the Stiltsville area. The meetings were held on September 24 and 25, 2001 at locations in Miami and Homestead, Florida. The meetings were held in a casual, open-house style, and were well attended.

A total of 85 comments were gathered at these public scoping meetings. The majority (56 percent) of the comments favored maintaining the status quo with the existing lessees remaining in long-term leases and control of the structures. Twenty-four percent of the comments expressed doubts that the National Park Service would be able to maintain and manage the structures and suggested that either status quo or another option be offered. Eighteen percent of the attendees were in favor of the structures being open for public use, and only one attendee recommended that the structures be removed.

*Web Site:* The park's web site has presented comprehensive information about Stiltsville and the planning effort, and has been used to solicit e-mail comment. The information presented on the web site includes meeting dates locations, press releases, planning updates, and contact information. Documents specific to the planning process are also posted on this site. The web page can be accessed at <http://www.nps.gov/bisc/stiltsville/stiltsvillewelcome.htm>.

There are also several websites operated by private individuals or organizations. Many of these have not been updated for the last two years, or since the park decided not to remove the structures. The websites still provide valuable insight and an historical perspective to the project.



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Bureau of Land Management	U. S. Coast Guard
Cape Hatteras National Seashore	U. S. Customs
Channel Islands National Marine Sanctuary	U. S. Department of Agriculture, Habitat Conservation Division
Channel Islands National Park	U. S. Department of Agriculture, Natural Resources Conservation Service
Delaware Water Gap National Recreation Area	U. S. Department of Justice
Everglades National Park	U. S. Department of Transportation
Florida Keys National Marine Sanctuary	U. S. Environmental Protection Agency, Region IV
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National Marine Sanctuary Council	

### State and Local Agencies

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City of Florida City	Greater Homestead/Florida City Chamber of Commerce
City of Homestead	Homestead Parks and Recreation Department
City of Miami Beach	Islamorada, Village Of Islands
City of Miami-Dade	Kiwanis Fish and Game
City of Plantation	Koreshan State Historic Site
Collier County	Mayor Alex Penelas' Office
Dade County Parks and Recreation	Miami Maritime Museum
Florida Coastal Management Program	Miami-Dade County
Florida Department of Environmental Protection	Miami-Dade Parks
Florida Department of Natural Resources	Monroe County
Florida Department of State, Historic Preservation	Oleta River State Park
Florida Department of Transportation	Senator Nelson's Office
Florida Fish and Wildlife Conservation Commission	South Atlantic Fishery Management Council
Florida Game and Freshwater Fish Commission	South Dade Soil and Water Conservation Service
Florida Governor's Council on Indian Affairs	South Florida Regulatory Planning Council
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Florida Keys Land & Sea Trust	Spaceport Florida Authority

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Honorable Bruno A. Barreiro, Miami-Dade County  
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Honorable Elaine Bloom, Florida State House of Representatives  
Honorable Larcnia J. Bullard, Florida State House of Representatives  
Honorable Jeb Bush, Executive Office of the Governor  
Honorable James Bush, Florida State House of Representatives  
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Honorable Mario Diaz-Balart, Florida State Senate  
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Honorable Howard C Forman, Florida State Senate  
Honorable "Rudy" Garcia, Jr., Florida State House of Representatives  
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Honorable Peter Goss, U. S. House of Representatives  
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Honorable Bert J Harris, Jr., State House of Representatives  
Honorable Alcee L. Hastings, U. S. House of Representatives  
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Miccosukee Tribe of Indians of Florida  
Seminole Nation of Oklahoma

Seminole Tribe of Florida  
United Southern and Eastern Tribes

#### **Organizations**

Ada Dive Club  
Aircraft Owners & Pilots Association  
American Fisheries Society  
American Oceans Campaign  
Archaeological & Historical Conservancy  
Atlantic Gamefish Foundation Inc.  
Auburn University, ME&R Center  
Audobon of Florida  
Audubon Society of the Everglades  
Baitmasters  
Balijet Environmental  
Ballyhoo Plantation Fish  
Beacon Council  
Big Cypress Water Resources  
Biscayne Aquatic Society Inc.  
Biscayne Bay Foundation  
Biscayne Bay Partnership Initiative  
Biscayne Bay Wingnet Association  
Biscayne Bay Partnership Initiative  
Boy Scouts of America  
Center for Marine Conservation  
Clean Ocean Action  
Clean Water Action  
Clean Water Trust  
Coast Alliance  
Coastal States Organization  
Dade County Public Schools  
Defenders of Wildlife  
Environmental Defense Fund  
Environmental Solutions International  
Florida Atlantic University  
Florida Audubon Society  
Florida Institute of Oceanography  
Florida Institute of Technology  
Florida International University  
Florida Keys Audubon Society  
Florida Marine Research Institute  
Florida Ocean Alliance

Florida Wildlife Federation  
Floridians for a Sustainable Population  
Friends of the Everglades  
Global Habitat Concerns Inc.  
Greater Miami Aviation Association  
Green America  
Homestead Yacht Club  
Hoover Environmental Group  
Izaak Walton League of America, Inc.  
Kea Environmental  
Keys Association of Dive Operators  
Marine Industries Association of South Florida  
Marine Resources Defense Fund  
Miami Circle Commission  
Miami Spring Springs Boat Club, Inc.  
Monroe County Commercial Fishermen Inc.  
Munson Foundation  
National Audubon Society  
National Parks and Conservation Association  
National Wildlife Federation  
Natural Resources Defense Council  
Nova Southeastern University  
Nova University  
Ocean Reef Community Association  
Pegasus Foundation  
Professional Marine Association  
Redland Citizens Association, Inc.  
Redland Conservancy  
Reef Relief  
Riviera Village Property Owners Association  
Sierra Club  
South Dade Senior High School  
South Florida Sports Fishermen Club  
Southeast Archeological Center  
Southwest Florida Regional Planning Council  
Southwest Florida Shrimp Association  
Submerged Resources Center  
Tavernier Community Association

Tennessee Valley Authority Watershed  
Technical Services  
The Featherbeds Initiative  
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The Marine Council  
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Theater of the Sea  
Tropical Anglers Fishing Club  
Tropical Audobon Society  
Tropical Everglades Visitors Association

University of Florida Tropical Research &  
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University of Miami  
Upper Keys Citizens Association  
Village of Key Biscayne  
Vision Council  
Wilderness Society  
Wildlaw Florida Office  
World Wildlife Fund  
Youth Fishing Foundation

#### **Libraries**

Brockway Memorial Library  
Dade County Library  
Florida City Public Library  
Florida International University Library  
Homestead Branch Library  
Key Biscayne Branch Library

Key Largo Branch Library  
Miami-Dade Community College Library  
Opa-Locka Public Library  
South Dade County Library  
South Miami Branch Library  
State Library of Florida

#### **Businesses**

Adventures in Diving  
Amfac Parks & Resorts  
Amy Slate's Amory Dive Resort  
Angel Auto  
Aqua-Nuts  
Atlantic Coast Kayak, Co.  
Atlas Homestead, Inc.  
Best Bait, Inc.  
Biscayne Bay Times  
Biscayne Wingnet  
Boat Center  
Capt. Harry's Fishing Supply  
Caribbean Mrc, Vero Beach Lab  
Carney Environmental  
Collier Resources Company  
Dinner Key Bait  
Divers Outlet Store  
Earthwise Production  
Enterprise Florida, Inc.  
Fabulous Fishing Adventures  
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## INDEX OF KEY WORDS

- Affected Environment, xxiv, 87
- Agencies, xxiii, xxvi, 18, 95, 163
- Agency, 2, 3, 18, 62, 95, 103, 104, 109, 163, 171
- Agreements, vii, 28
- Air Quality, 17
- Alternative, 3, vi, viii, ix, x, xi, xii, xiii, xiv, xv, xvi, xvii, xviii, xix, xx, xxi, xxiii, xxiv, xxv, xxvi, xxvii, 5, 21, 23, 24, 26, 29, 30, 31, 32, 33, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 95, 97, 98, 99, 100, 101, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 117, 118, 119, 120, 121, 124, 125, 126, 127, 129, 130, 132, 133, 134, 135, 138, 139, 140, 141, 143, 144, 145, 146, 148, 149, 150, 151, 152, 153, 154, 155, 157, 158, 196, 197
- Alternatives, vi, xii, xiii, xiv, xv, xvi, xvii, xviii, xix, xx, xxi, xxiii, xxiv, xxvii, 21, 22, 27, 34, 36, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 99, 119, 126, 133, 139, 143, 154, 155, 158
- Analysis, xi, xxv, 16, 19, 49, 87, 88, 93, 122, 169
- Aquatic, 13, 19, 41, 102, 165, 167, 168, 171
- Artist, 24, 26
- Bay, iii, ix, x, xiii, xiv, 1, 2, 10, 13, 14, 17, 19, 20, 23, 35, 37, 52, 53, 61, 62, 64, 65, 66, 70, 73, 76, 77, 78, 80, 81, 82, 85, 86, 95, 97, 98, 99, 104, 105, 106, 109, 110, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 131, 138, 141, 143, 157, 164, 165, 166, 167, 168, 169, 194, 195, 197, 203
- Biological, vi, xiii, xxiii, xxiv, xxv, 13, 17, 41, 52, 64, 70, 72, 73, 80, 89, 94, 102, 117, 120, 162, 171, 201
- Biscayne National Park, 2, 3, iv, v, ix, x, xi, xvii, xxiv, xxvii, 1, 5, 6, 9, 10, 11, 12, 13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 33, 34, 35, 37, 39, 46, 56, 65, 66, 69, 70, 72, 73, 75, 76, 77, 78, 80, 83, 85, 88, 89, 90, 91, 92, 93, 103, 106, 111, 112, 117, 122, 129, 130, 131, 132, 133, 136, 137, 138, 147, 153, 157, 159, 162, 167, 168, 169, 191, 199, 206
- Boat, xxvii, 25, 26, 31, 39, 40, 78, 100, 130, 165, 166, 167
- Boating, 10, 78, 102, 161, 166, 167, 170
- Camping, 77, 195
- Costs, viii, ix, 50
- Cultural, vi, xvi, xxiii, xxiv, xxv, 14, 44, 55, 75, 90, 123, 162, 202
- Cumulative Actions, xxiii, 17, 19
- Damage, 167, 176
- Dive, 165, 166
- Diving, 166
- Economic, 19, 73, 152
- Effect, 131
- Effects, xxv, xxvi, xxvii, 87, 89, 90, 91, 93, 97, 98, 99, 100, 102, 104, 105, 106, 107, 108, 109, 110, 112, 113, 114, 115, 118, 119, 120, 121, 122, 125, 126, 127, 131, 132, 133, 134, 138, 139, 140, 143, 144, 145, 148, 149, 150, 151, 154, 155, 156, 171
- Endangered, vi, xiv, xxiii, xxiv, xxv, xxvii, 14, 43, 53, 66, 70, 71, 89, 102, 111

Environmental, 1, 2, 3, iv, ix, x, xi, xxv, 1, 5, 12, 13, 16, 17, 18, 19, 21, 37, 38, 39, 49, 62, 73, 79, 87, 93, 95, 103, 104, 109, 122, 123, 124, 132, 142, 152, 161, 163, 165, 166, 167, 168, 169, 171, 196, 198

Federal, 2, 3, viii, 30, 71, 93, 95, 103, 104, 137, 142, 152, 159, 163, 167

Fish, 19, 66, 71, 73, 89, 95, 111, 116, 163, 165, 166, 170, 171

Fishing, 27, 77, 131, 166

Florida, 1, 2, 3, v, x, xii, 1, 9, 10, 11, 12, 13, 19, 20, 21, 23, 24, 35, 36, 38, 51, 61, 62, 64, 65, 66, 70, 71, 75, 77, 78, 79, 84, 85, 95, 96, 98, 104, 107, 110, 111, 115, 118, 121, 123, 124, 127, 131, 159, 160, 161, 163, 164, 165, 166, 167, 168, 169, 170, 171, 197, 198, 203

Habitat, xxiv, 19, 69, 73, 116, 161, 163, 165, 169, 170, 201

Habitats, 167

Historic, xxiv, xxvii, 15, 20, 38, 44, 75, 76, 90, 122, 123, 124, 127, 163, 202, 204

Hurricane, iii, 1, 11, 12, 76, 84, 85, 127, 157, 167

Impacts, xi, xii, xiii, xiv, xv, xvi, xvii, xviii, xix, xx, xxi, xxiv, xxv, xxvi, xxvii, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 70, 91, 95, 98, 99, 100, 104, 107, 108, 111, 113, 114, 117, 118, 119, 120, 122, 124, 125, 126, 129, 132, 134, 136, 138, 139, 140, 142, 143, 144, 145, 147, 148, 149, 150, 151, 152, 154, 155, 158, 168

Indian, 18, 64, 66, 70, 71, 163, 205

Justice, 17, 163, 175

Leaseholder, viii, 30

Leases, viii, x, xxiv, 30, 34, 38

Legislature, 20

Lessees, 32

Maintenance, ix, xxvi, 83, 157

Management, 1, 2, 3, iv, vi, viii, ix, x, xii, xiii, xiv, xv, xvi, xvii, xviii, xix, xx, xxi, xxiii, xxiv, xxv, xxvi, xxvii, 1, 5, 9, 17, 18, 19, 20, 33, 37, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 73, 88, 89, 90, 91, 92, 95, 98, 107, 110, 113, 115, 116, 118, 121, 123, 125, 128, 131, 132, 136, 137, 139, 144, 147, 148, 149, 154, 157, 161, 162, 163, 167, 168, 169, 170, 171, 191, 199, 201

Methodology, xxv, xxvi, 13, 87, 94, 102, 111, 116, 122, 128, 136, 142, 147, 152

Miami, iii, x, xxvii, 2, 6, 10, 11, 17, 19, 23, 24, 35, 46, 61, 62, 75, 76, 77, 78, 79, 82, 84, 85, 86, 95, 97, 98, 112, 116, 123, 129, 130, 134, 138, 141, 142, 148, 150, 151, 153, 159, 160, 161, 163, 164, 165, 166, 167, 168, 171, 184, 191, 193, 195, 196, 197, 198

Mission, iv, v, xxiii, 6

Mitigation, xxiii, 22, 89, 90, 91, 92, 167

National Park Service, 2, 3, iv, v, vi, vii, viii, ix, x, xii, xiii, xiv, xv, xvi, xvii, xviii, xix, xx, xxi, xxiii, xxiv, xxv, xxvi, 1, 2, 5, 9, 11, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 71, 77, 78, 79, 83, 85, 88, 93, 95, 98, 99, 100, 101, 103, 104, 105, 107, 108, 109, 110, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 125, 126, 127, 128, 129, 130, 132, 136, 137, 139, 140, 141, 142, 144, 145, 146, 147, 148, 149, 150, 151, 152, 154, 157, 159, 160, 161, 162, 163, 168, 169, 190, 191, 197, 202

Natural, iii, 9, 18, 19, 80, 89, 91, 95, 103, 161, 163, 165, 167, 169

NEPA, 5, 17, 191

## REFERENCES

- Plan, 1, 2, 3, iv, xxiii, xxvii, 1, 5, 18, 19, 20, 61, 62, 73, 89, 90, 91, 92, 93, 95, 110, 115, 121, 131, 157, 167, 168, 169, 170, 191
- Policies, xxv, xxvi, 17, 88, 95, 103, 111, 116, 123, 128, 136, 137, 142, 147, 148, 152, 169
- Policy, ix, x, 5, 12, 17, 18, 21, 37, 38, 73, 93, 122, 123, 124, 142, 152, 167, 198
- Prehistoric, 76
- Purpose, iii, iv, xxiii, xxiv, 1, 6, 39, 93, 157
- Recreation, 85, 163, 167, 171
- Regulations, xxv, xxvi, 18, 19, 64, 93, 95, 103, 104, 111, 116, 123, 128, 136, 137, 142, 147, 152, 167
- Safety, iv, vii, ix, xvii, xxiii, xxiv, xxv, 5, 6, 10, 15, 27, 31, 33, 34, 35, 39, 44, 50, 56, 61, 62, 65, 77, 85, 97, 109, 114, 120, 121, 131, 134, 161, 197
- Safety Valve, iv, ix, 5, 6, 10, 33, 34, 35, 39, 50, 61, 62, 65, 97, 109, 114, 120, 121, 131, 134, 197
- School, 24, 79, 116, 130, 132, 161, 165, 167, 168, 193, 194, 196, 197, 198
- Significance, iv, v, xxiii, 6, 9
- Snorkeling, 77, 131
- Socioeconomic, vi, 90
- Spill, 6
- State, 12, 71, 75, 77, 95, 123, 124, 127, 163, 164, 165, 166, 170, 202, 203
- Stiltsville, 3, iv, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv, xvi, xvii, xviii, xix, xx, xxi, xxiv, xxvii, 1, 2, 5, 6, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 69, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 85, 86, 87, 93, 94, 96, 97, 98, 99, 100, 101, 103, 104, 105, 106, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 124, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 157, 158, 159, 160, 167, 169, 191, 192, 193, 194, 195, 196, 197, 198, 199, 201, 202, 203, 204
- Structure, 16, 26, 27, 31, 44, 46, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190
- Structures, ix, xii, xiii, xiv, xv, xvi, xvii, xviii, xix, xx, xxi, xxiii, xxiv, xxv, xxvi, xxvii, 26, 27, 28, 31, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 100, 102, 109, 114, 120, 126, 133, 134, 140, 145, 151, 155, 167, 169, 194, 197
- Threatened, xiv, xxiii, xxiv, xxv, xxvii, 14, 43, 53, 66, 70, 71, 102
- Urban, 61
- Urbanization, 19
- Visitor, vi, ix, xvii, xxiii, xxiv, xxv, xxvii, 15, 24, 33, 44, 50, 56, 77, 83, 85, 90, 91, 131, 134, 137, 167
- Visitors, v, 9, 24, 26, 45, 80, 90, 129, 130, 131, 134, 166
- Visual, vi, xix, xxiii, xxiv, xxvi, 15, 46, 58, 75, 82, 91
- Wetlands, 17
- Wilderness, 1, 17, 166, 169

## **APPENDIX A DESCRIPTION OF THE STILTSVILLE STRUCTURES**

All structures were inspected during November 2000 by Global Construction Services, Inc., an independent contractor hired by the U.S. Department of Justice to perform the structure inspections. The information found in this appendix was summarized from the Global Construction Services engineering reports.

After inspection, each structure was rated according to three different categories of susceptibility to further damage: high susceptibility, moderate susceptibility, and low susceptibility. Global Construction Services describes these categories as:

**High Susceptibility:** A structure has already experienced a significant amount of degradation/deterioration/damage to its major and primary building/structural systems and/or its nonstructural elements. Existing conditions with external environment may result in further degradation/deterioration/damage of these elements and components, and may sustain injuries to people/animal in or around the structure.

**Moderate Susceptibility:** A structure has not yet experienced significant degradation/deterioration/damage to its major and primary building/structural systems and/or its nonstructural elements, which would lead to further degradation/deterioration/damage due to existing conditions with external environment.

**Low Susceptibility:** A structure is not expected to experience any degradation/deterioration/damage when subjected to existing conditions with external environment.

## **STRUCTURE 2146**

### **SUSCEPTIBILITY RATING: HIGH**

Structure 2146 is a two-level building supported by concrete pilings with a dock supported by wood pilings. The first level is an open dock area and the second level is a cabin. The upper level is approximately 8 feet-6 inches above the dock and accessible by a stairway with a locked hatchway door. During the inspection, interior access was not available, but there does not appear to be any toilet facilities, permanent electrical power or a water supply at this structure.

Access to the interior of the structure was not available.

### **STRUCTURAL SYSTEM**

The main support beams for the floor joists consist of 12 inch x 12 inch concrete piling with doubled up 2 x 12s. The floor joists are 2 x 10s spaced at 16 inches on center. Many of the joists are infected with dry rot and replacement joists have been installed next to them, but are not fastened to the original joist. In addition, the length of the 2 x 10s is longer than recommended. The inspector concludes that the existing floor system is not strong enough to support the 100 pounds per square foot floor load usually required by building codes in public places.

The 2 x 12 beams are held in place with a pair of bolts on either side of the piling. Relieving angles (heavy pieces of steel which are bolted into the pilings) are installed under the 2 x 12 beams to support the load. The inspector noted three concerns: the relieving angles are severely rusted to the point that their structural integrity may be degraded; the bolted connections may not be adequate; and the hurricane straps appeared to be weathered with some rust.

### **CONCRETE PILING**

Damage is evident to many of the piling at this structure. Most of the damage is between the water line and approximately 5 feet above the water line. The reinforcing steel is rusting due to exposure caused by the surface concrete being broken away. A detailed structural analysis is needed to determine if this damage has degraded the structural integrity of the piling.

### **CABIN AND DECK**

The siding on the cabin is a 12-inch drop siding that appears to be in fairly good condition. The windows are shuttered by plywood and the one entry door has triple locks. The wooden deck consists of 2 x 6 planks and extends all the way around the cabin. The deck was severely rotted in places and in an overall deteriorated condition. The deck is surrounded by a railing 34 inches high with three horizontal 2 x 4s: the first at toe level, the second 11 inches off the deck and the third 21 inches off the deck. This does not meet the building code requirement of horizontal supports being less than 4 inches apart.



## **DOCK**

Both wood and concrete piling support the dock. The deck on the dock is constructed of 2 x 6 planks that appear to be in good condition. The dock appears to accommodate 3 or 4 small boats and has no additional structures.

## **OTHER ISSUES**

It appears no fire protection system is installed on Structure 2146. The local fire marshal or other controlling authority should coordinate this requirement if necessary.

Handicapped access to the cabin level is not possible with the current configuration of the dock. The dock would have to be expanded to accommodate approximately 100 feet of ramp necessary to travel the vertical distance between the dock and the upper level.

Only one exit currently exists to the upper level cabin. The building code requires a minimum of two exits from every floor above the first floor (subject to rulings by the local fire marshal or the controlling authority).

## **RECOMMENDATIONS**

The inspector recommends that Structure 2146 be closed to public access until structural upgrades are performed. A local structural engineer should be hired to thoroughly evaluate the structural system and to design repairs and upgrades.

## **STRUCTURE 2157**

### **SUSCEPTIBILITY RATING: HIGH**

Structure 2157 is a small, four-room cabin supported by an A-frame structural system. The cabin is approximately 15 feet x 40 feet and surrounded by a wooden deck which connects to the main dock by a ramp. There is an additional outbuilding (approximately 16 feet x 16 feet) that contains a small restroom and storage area. The cabin contains a small kitchen and has window openings on all sides of the structure. The windows do not have frames or glass, but have heavy wood shutters for covering when not in use.

### **STRUCTURAL SYSTEM**

The structural system of Structure 2157 is an A-frame type system. Heavy timber members form the horizontal cross braces and are bolted to the pilings. Each piling is set in a large concrete anchor that appears to be resting on the bottom of the bay as opposed to being embedded. One of the pilings has "checked" (a lengthwise split) and has a small area of dry rot. The other pilings appear to be in good condition.

The cross braces consist of 4 x 12s installed at each "A". Many of these cross braces are quite deteriorated and contain extensive dry rot. Repairs have been made in one location. The bracing between the adjacent "A"s is provided by the exterior walls of the cabin and by "X" bracing which consists of steel angles. At least one steel angle has rusted completely through and others are so heavily corroded that their structural capacity may be diminished.

There is an extensive amount of dry rot visible in the wood of this structure, including some of the floor joists. The entire floor appears to be deteriorating and in a weakened condition; in fact, the center of the floor is sagging approximately 3 inches.

### **CABIN AND OUTBUILDING**

The entire cabin area is in very poor condition and shows significant deterioration. The floor has extensive dry rot; many boards are loose or missing, and one section has a hole where the ocean is visible below. The interior wall and ceiling surfaces consist mostly of painted and unpainted plywood. The ceiling shows evidence of previous water leaks. The kitchen has a small range, small refrigerator, and a sink which drains directly to the ocean below.

The outbuilding is largely used as a storage building with one corner walled off to create an area for an organic type toilet (zero discharge). The walls appear to be in good condition although the ceiling joists are water stained. An outdoor sitting area has been created on the roof of the outbuilding which is accessible by a ramp from the deck. No hurricane straps are visible.

### **DOCK AND DECK**

The main dock is approximately seven feet wide with a narrow "finger" pier which is about 3 feet wide. The dock is supported by pilings consisting of pressure treated timber and appear to be in good condition. The structural beams and decking also appear to be in good condition.

The planks of the wooden deck, which completely surrounds the cabin, are weathered and show minimal dry rot. The planks are irregularly spaced and could be a tripping hazard. The railing around the deck is 32 inches high - lower than the building code requirement of 42 inches.

### **OTHER ISSUES**

Structure 2157 does not have enough space to install a handicapped access ramp without expanding the dock; however, the existing ramp, from the dock to the deck, could be modified to allow access via wheelchair.

A fire protection system is not installed in this structure. The local fire marshal or other controlling authority would determine if this was required.

### **RECOMMENDATIONS**

The inspector recommends that Structure 2157 be closed to public use and demolished. The deterioration throughout the cabin and support structures is to the point of repairs being more costly than building a new structure. Some of the pilings could be salvaged if determined to be structurally sound.

## **STRUCTURE 2159**

### **SUSCEPTIBILITY RATING: MODERATE**

Structure 2159 consists of a one-room cabin surrounded by a wooden deck, on the upper level and a dock on the first level. Access to the second level is provided by a single staircase and there is a small storage room on the first level. This structure has no toilet facilities, water supply, or permanent source of electrical power.

### **STRUCTURAL SYSTEM**

The structural system for Structure 2159 consists of 12 inch x 12 inch concrete piling with 4 x 12 timber support beams bolted directly to the piling. The floor joists are 2 x 8s with a maximum span of 12 foot-6 inches. The existing floor does not appear to be strong enough to support 100 pounds per square foot floor load as usually required in public places.

In addition, the beam/piling bolted connections are a serious structural concern due to severe rust and the fact that the entire load of the structure rests on the bolt between the piling and the 4 x 12. There was evidence that one of the 4 x 12s has been repaired and several of the concrete pilings have been repaired with a concrete patch. One piling is cracked. Numerous hurricane straps are rusted completely through and many others are in a deteriorated condition. Several have been replaced within the last few years.

### **CABIN**

The cabin is a single room approximately 20 feet x 30 feet. The walls are covered with varnished plywood panels and the floor is carpeted. The windows do not contain either glass or frames, but are covered by removable, heavy wood framed storm shutters. The interior appears to be clean and in good condition. The roof is sheathed with plywood and the trusses are fastened to the top of the exterior wall with hurricane straps. No evidence of leaks was observed.

The cabin has some electrical wiring, but no electrical panel or point of attachment for a generator was found. A kitchen sink and a gas range are installed in one corner. The exterior siding on the cabin is T111 siding which is unpainted and in good condition. The roof is a three tab composition shingle roof which appears to be in good condition.

### **DECK AND DOCK**

The deck goes all around the cabin and consists of 2 x 6 planks that appear to be in good condition. The perimeter railing is 36 inches high which does not meet the building code requirement of a height of 42 inches. The dock is also constructed of 2 x 6 planks and appears to be in good condition. There is a small wood framed storage building located on the dock under a corner of the cabin. The existing metal door is rusted, but otherwise the building is in good condition. No hurricane straps were evident connecting the joists underneath the dock deck to the 4 x 12 beams bolted to the pilings. The dock is large enough to accommodate 2 or 3 small boats.

## **OTHER ISSUES**

It appears no fire protection system is installed on Structure 2159. The local Fire Marshall or other controlling authority should coordinate this requirement if necessary.

Handicapped access to the cabin level is not possible with the current configuration of the dock. The dock would have to be expanded to accommodate approximately 100 feet of ramp necessary to travel the vertical distance between the dock and the upper level.

Only one exit currently exists to the upper level cabin. The building code requires a minimum of two exits from every floor above the first floor (subject to rulings by the local fire marshal or the controlling authority).

## **RECOMMENDATIONS**

The interior of the cabin would require only a minor amount of work to make it suitable for use by the public; however, the inspector recommends that Structure 2159 be closed to public access until structural upgrades and repairs are performed. A local structural engineer should be hired to thoroughly evaluate the structural system and to design repairs and upgrades.

## **STRUCTURE 2167**

### **SUSCEPTIBILITY RATING: MODERATE TO HIGH**

Structure 2167 is a two level structure supported by concrete piling. The lower level is a dock which extends underneath the upper level and includes a small storage building. A stairway provides access to the upper level which consists of three structures connected by the deck. The largest structure is surrounded on three sides by the walkway/deck. A lot of PVC piping and electrical wiring is visible, but much of it is deteriorated and apparently not functional. There does not appear to be a permanent water supply or permanent source of electrical power.

Access to the interior of the structure was not available.

### **STRUCTURAL SYSTEM**

The structural system for Structure 2167 consists of 2.5 inch x 11 inch main support beams bolted to 12 x 12 concrete piling. The existing floor, comprised of 2 x 10s, does not appear to be strong enough to support the 100 pounds per square foot floor load usually required in public places.

One concern at this structure are the beam/piling connections. Two of the main support beams are severely cracked and many of the bolts are heavily rusted with no relieving angles installed to distribute the weight of the structure. Several of the "X" braces providing lateral support are broken and no longer functional, and others are anchored in the water to piling with resulting severe rust. Many hurricane straps are severely deteriorated. In addition, several of the concrete piling have been damaged and show evidence of attempted repairs. The entire structural system at Structure 2167 should be evaluated, including the adequacy of the 2.5 inch x 11 inch main beams, the 2 x 10 floor joist system and the lateral stability of the structure.

### **CABIN AND STORAGE BUILDING**

The exterior of the cabin is constructed with a board and batten type siding which appears to be in good condition. The roof is shallow pitched, covered with a three tab composition shingle, and appears aged and weathered. The area over the breezeway appears to be damaged. Next to the main cabin is a smaller structure which appears to be a bunk room. The other small structure on the upper level may be a generator room. On the lower level, there is a small building that is probably used for storage and may house a holding tank.

### **DECK AND DOCK**

The upper level deck is constructed of 2 x 6 planks and appears to be in fairly good condition. The railing around the upper deck is 40 inches high with no intermediate railings which does not meet the building code. The code requires railings 42 inches in height with intermediate rails less than 4 inches apart.

The dock is also constructed of 2 x 6 planks and appears to be in good condition. The dock is large enough to accommodate seven or eight small boats.

## **OTHER ISSUES**

It appears no fire protection system is installed on Structure 2167. The local fire marshal or other controlling authority should coordinate this requirement if necessary.

Handicapped access to the cabin level is not possible with the current configuration of the dock. The dock would have to be expanded to accommodate approximately 100 feet of ramp necessary to travel the vertical distance between the dock and the upper level.

Only one exit currently exists to the upper level cabin. The building code requires a minimum of two exits from every floor above the first floor (subject to rulings by the local fire marshal or the controlling authority).

## **RECOMMENDATIONS**

The inspector recommends that Structure 2167 be closed to public access until structural upgrades are performed. A local structural engineer should be hired to thoroughly evaluate the structural system and to design repairs and upgrades.

## **STRUCTURE 2173**

### **SUSCEPTIBILITY RATING: MODERATE TO HIGH**

Structure 2173 is the Miami Springs Outboard Club. This is a two level structure supported by concrete piling. The first level is a large dock area which extends beneath the upper level, with a pier that extends 100 feet to the north and a second pier that extends 180 feet to the south. Access to the second level is provided by two staircases. Three small rooms are also on this level, apparently used for storage and restrooms. Moored near the restrooms is the hull of an old pontoon boat which has apparently been converted to a floating holding tank for the sanitary sewer system.

The upper level contains one large room with a small kitchen on one side. This cabin is surrounded by a wooden walkway which includes a large sitting area on one end. Also on this level is a separate structure that houses two restrooms. A generator housed on the first level appears to be the source of electrical power for this structure. A fresh water supply is not apparent.

Access to the interior of the structure was not available, but some of the interior was visible through the windows.

### **STRUCTURAL SYSTEM**

The structural system for Structure 2173 is comprised of 12 inch x 12 inch concrete piling. The main support beams are of several different types: 4 x 12s, 4 x 8s, doubled up 2 x 12s, and a 10 inch deep steel channel. The floor joists are 2 x 8s at 16 inches on center with spans as much as 19 feet-1 inch. The existing floor joist system does not appear to be strong enough to support the 100 pounds per square foot floor load typically required in public facilities.

The beam/piling connections are also a serious structural concern. Two types of connections have been used, a friction-type and a through-bolt type. One of the friction-type connections has apparently slipped, leaving a gap between the floor joist and the main support beam. Many of the connection bolts are severely rusted and their structural capacity may have been diminished. Also, the ability of the 4 x 12 main support beams to support the load adequately is questionable due to the length of the span between the piling. There is a measurable sag and visible dry rot in several of the main support beams underneath the deck. Some of the galvanized steel cables used to provide horizontal "X" bracing between the pilings are loose and the hurricane straps are severely rusted.

### **CABIN AND OUTBUILDINGS**

The main cabin is approximately 51 feet long x 21 feet wide with a vinyl tile floor and exposed roof system. The interior of the cabin appears to be in good condition. The exterior consists of lap siding and lanai-type windows. The roof is constructed with three tab composition shingles and also appears to be in good condition.

On the upper level there is one outbuilding which houses two restrooms and a small storage enclosure underneath the stairs. This enclosure may need to be removed as a fire hazard. On the lower level there are two structures, one is a combination restroom/storage facility and the other is a generator room. The roof of the generator room does not appear to have enough pitch to allow for proper drainage. The T111 plywood siding that covers the enclosures appears to be in good condition.



## **DECK AND DOCK**

The deck consists of 1 x 6 decking which is fairly weathered. It may be necessary to upgrade the decking to 2 x 6 to meet the required weight load for a public structure. The perimeter railing and intermediate rails do not meet the required height and spacing limits as specified by the building code.

Structure 2173 has a large dock system, consisting of 1 x 6 planks, supported by both wood and concrete piling. The wood is in good condition, but the bolts are heavily rusted and may need to be replaced. Several of the concrete piling supporting the dock have been damaged and rust from the reinforcing steel inside is visible. The water along the southern pier (180 feet long) appears to be too shallow for boat moorage. The northern pier (100 feet long) could accommodate 12 to 13 small boats.

## **OTHER ISSUES**

It appears no fire protection system is installed on Structure 2173. The local fire marshal or other controlling authority should coordinate this requirement if necessary.

Handicapped access to the cabin level could be added with some modifications to the current configuration of the dock. The dock area would have to be expanded to accommodate approximately 100 feet of ramp necessary to travel the vertical distance between the dock and the upper level. No additional pilings would be necessary.

The building code requires a minimum of two exits from every floor above the first floor (subject to rulings by the local fire marshal or the controlling authority). This structure has two exit stairways.

## **RECOMMENDATIONS**

The interior of the cabin would require only a minor amount of work to make it suitable for use by the public; however, the inspector recommends that Structure 2173 be closed to public access until structural upgrades are performed. A local structural engineer should be hired to thoroughly evaluate the structural system and to design repairs and upgrades.

## **STRUCTURE 2213**

### **SUSCEPTIBILITY RATING: MODERATE TO HIGH**

Structure 2213 is a two level structure supported by concrete pilings. The dock is the first level, which extends underneath the upper level, and has one small plywood enclosure. The second level, accessible by one stairway, contains one large cabin consisting of two rooms and one walled-off area. A large wooden deck surrounds the cabin and has a sitting area on each end. There do not appear to be any toilet facilities, water supply, or permanent source of electrical power at Structure 2213.

Access to the interior of the structure was not available, but some of the interior was visible through the windows.

### **STRUCTURAL SYSTEM**

12 inch x 12 inch concrete pilings with 12 inch x 13 inch timber beams comprise the structural system for Structure 2213. Deterioration was noted in the supporting 2 x 10s as well as in the decking on top of the 2 x 10s. This deterioration was widespread underneath the structure and appeared to be due to worms or termites, as opposed to dry rot. The maximum span of the 2 x 10 floor joists was 14 feet-3 inches. The floor does not appear to be strong enough to support the 100 pounds per square foot floor load typically required for public structures.

In addition to the structural concern regarding the damage by worms or termites, the hurricane straps (between the 2 x 10s and the heavy timber beams) and other steel connectors are severely rusted and deteriorated and should be replaced.

### **CABIN AND OUTBUILDINGS**

The dimensions of the cabin are approximately 36 feet x 30 feet, with the roof on one end overhanging 8 feet and the roof on the other end overhanging 10 feet to create a covered deck on each end. The doors, siding and soffit appear to be in good condition. The roof of the cabin is a mansard roof, missing some shingles, and the built-up section on top of the cabin is severely deteriorated and needs to be completely replaced.

The interior, as viewed through the windows, consists of two rooms and a small walled off area containing a storage tank. The flooring is unfinished plywood and the roof structure is framed with pre-manufactured trusses. Three plastic pipes drain from the cabin; one drains into the holding tank, but it is unknown what drains through the other two pipes.

A small plywood structure is located on the main dock, next to the stairway. This room apparently houses a holding tank into which gray water from the kitchen sink runs.

### **DECK AND DOCK**

The 2 x 6 and 2 x 10 planks of the deck appear to be in good condition from the top; however, the underside of the planks are deteriorated due to worms and/or termites. The deck surrounds the cabin on three sides and has a sitting area on each end. The railing of the deck is 34 inches high with an

intermediate horizontal rail 14 inches above the deck. This does not meet the building code requirement of 42 inches in height with intermediate rails less than 4 inches apart.

The deck of the dock consists of 2 x 6 planks and appears to be in good condition. The main dock is supported by 12 x 12 concrete piling and the finger piers are supported by pressure treated wood piling. This dock would accommodate six or seven small boats.

## **OTHER ISSUES**

It appears no fire protection system is installed on Structure 2213. The local fire marshal or other controlling authority should coordinate this requirement if necessary.

Handicapped access to the cabin level is not possible with the current configuration of the dock. The dock would have to be expanded to accommodate approximately 108 feet of ramp necessary to travel the vertical distance between the dock and the upper level.

Only one exit currently exists to the upper level cabin. The building code requires a minimum of two exits from every floor above the first floor (subject to rulings by the local fire marshal or the controlling authority).

## **RECOMMENDATIONS**

The inspector recommends that Structure 2213 be closed to public access until structural upgrades are performed. A local structural engineer should be hired to thoroughly evaluate the structural system and to design repairs and upgrades. It is also recommended to repair or replace the roof.

## **STRUCTURE 2303**

### **SUSCEPTIBILITY RATING: HIGH**

Structure 2303 is a two level structure supported by concrete piling. The lower level is the dock which extends underneath the structure. The upper level, accessible by a stairway, contains a cabin and is surrounded by a wooden walkway with a deck at one end. At the end of the dock there is a stairway leading to an elevated platform which serves as an outdoor sitting area. There does not appear to be a fresh water supply or a permanent electrical power source at this structure. The availability of toilet facilities is unknown. Access to the interior of the structure was not available and all of the windows were shuttered and locked.

### **STRUCTURAL SYSTEM**

This structure is supported by 12 inch x 12 inch concrete pilings with 4 x 10 support beams bolted to the piling. The 2 x 10 floor joists are spaced at approximately 16 inches on center and the maximum span was measured to be 16 feet. The floor does not appear to be strong enough to support the 100 pounds per square foot floor load typically required for public structures.

Of serious structural concern are the 4 x 10 beam/piling bolted connections. The wooden 4 x 10s are bolted directly to the concrete pilings with no relieving angles to reduce the stress on the bolts, and the bolts are severely rusted and may have a reduced capacity. The floor joists and 4 x 10 support beams appear to be in good condition.

Many of the hurricane straps are severely rusted and deteriorated. Several have rusted through completely and only a few have been replaced. Several of the concrete piling have damage between the water level and approximately 5 feet above the water level resulting in possible weakening of the structural integrity of the pilings.

### **CABIN AND OUTBUILDINGS**

The exterior of the cabin is covered by 3/4 inch thick, painted plywood with unpainted plywood soffit above the walkways around the cabin - all showing signs of deterioration and lack of maintenance. The birdscreen covering the linear vents has deteriorated or is missing. Visible nail plates attached to the roof trusses were severely rusted, almost to the point of rusting completely through and being non-functional. The degradation of the nail plates is a very serious concern and the entire structure must be evaluated before repair or replace decisions can be made.

Access to the roof was not available, but based on water stains seen on the soffits and the rusty nail plates, the roof appears to be leaking and will need to be repaired.

On the dock beneath the cabin is one plywood enclosure that appears to be used for storage and housing of a large fiberglass tank, possibly used for collecting rainwater. The tank had an overflow pipe which would release excess water into the ocean.

## **DECK AND DOCK**

The perimeter railing of the deck around the cabin is 32.5 inches high with an intermediate horizontal rail at 15 inches. This does not meet the building code requirement of 42 inches in height and intermediate rails less than 4 inches apart. The dock is constructed of 2 x 6 planks and appears to be in good condition. An elevated sitting area or deck has been built on one end of the dock, but the stairway to this deck has large gaps between the planks of the stair treads making it non-compliant with the building code. A guardrail at the far end has a missing section that must be replaced. The dock appears able to accommodate five to six small boats.

## **OTHER ISSUES**

It appears no fire protection system is installed on Structure 2303. The local fire marshal or other controlling authority should coordinate this requirement if necessary.

Handicapped access to the cabin level is not possible with the current configuration of the dock. The dock would have to be expanded to accommodate approximately 100 feet of ramp necessary to travel the vertical distance between the dock and the upper level. Only one exit currently exists to the upper level cabin. The building code requires a minimum of two exits from every floor above the first floor (subject to rulings by the local fire marshal or the controlling authority).

## **RECOMMENDATIONS**

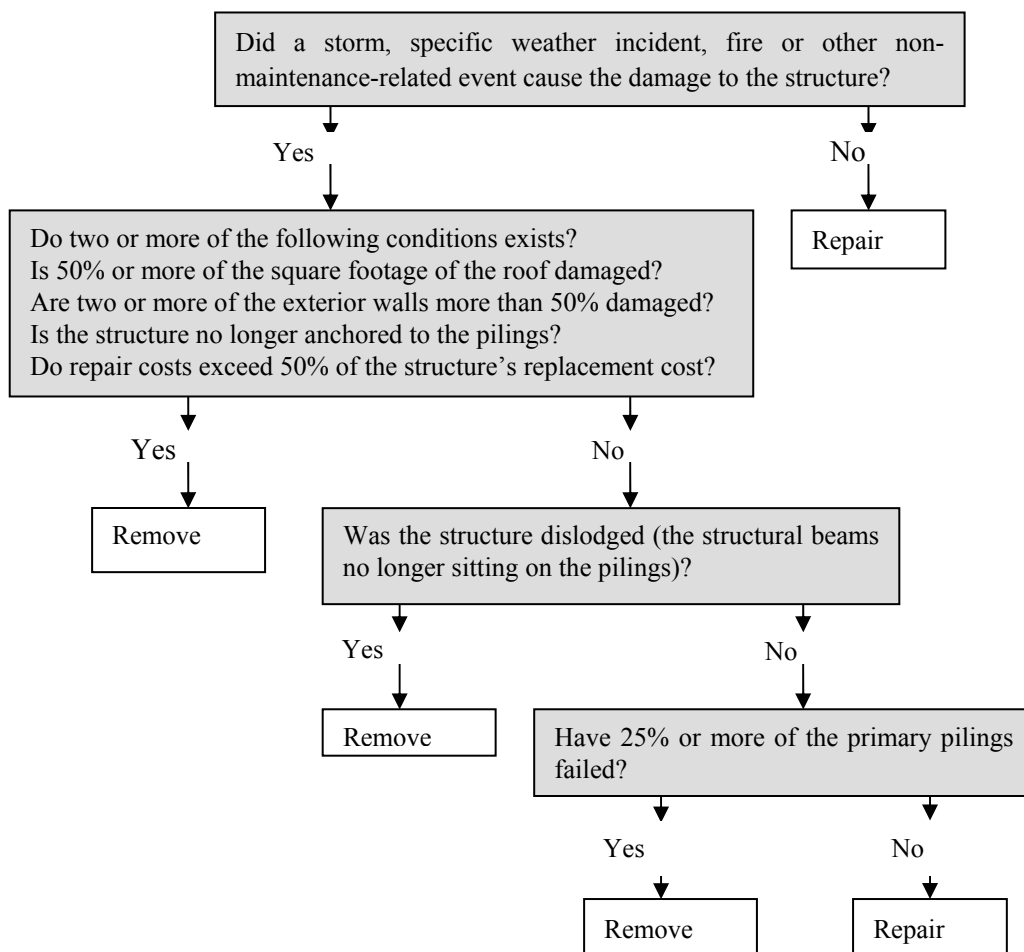
The inspector recommends that Structure 2303 be closed to public access until structural upgrades are performed and until a complete and thorough investigation into the structural integrity of the roof system is performed. A local structural engineer should be hired to thoroughly evaluate the structural system and to design repairs and upgrades. It is also recommended that the storage enclosure on the dock be removed, as well as the piping for the drainage system, and the existing electrical system. The elevated sitting area at the end of the dock may remain, but the stairs should be removed and replaced with stairs in compliance with building code.

## APPENDIX B

### DECISION TREE FLOW DIAGRAM

#### CRITERIA USED TO DETERMINE WHETHER A DAMAGED STRUCTURE SHOULD BE REMOVED OR REPAIRED

Note: For alternatives that involve National Park Service management of the structures, repairs would be contingent upon the availability of funding.



**APPENDIX C**  
**STILTSVILLE COMMITTEE REPORT**  
**NATIONAL PARK SERVICE ADVISORY BOARD**  
**MAY 4-5, 2002**

The Stiltsville Advisory Committee, having met in Miami on May 4-5, 2002, recommends to the National Park Service Advisory Board that:

1. Consistent with National Park Service (“National Park Service”) ownership and control, but in recognition of the stakeholders’ intent to organize a Stiltsville Trust for purposes of managing the Stiltsville structures pursuant to a Memorandum of Understanding (“MOU”) with the National Park Service, the National Park Service begin immediately to develop a special use permit (or similar) for all seven current houses for such period as will be required to fully document and implement these recommendations;
2. Beginning immediately, the National Park Service complete revisions of its General Management Plan and preparation of a NEPA environmental impact statement to incorporate and document the preferred alternative for long-term management of the Stiltsville structures which is herein recommended;
3. Beginning immediately, stakeholders, in cooperation with the National Park Service, proceed to organize a Stiltsville Trust, which will qualify as a 501(c)(3) non-profit, tax exempt institution, whose purpose it will be to negotiate a long-term cooperative agreement with the National Park Service for management of the Stiltsville structures, so as to provide (i) enhanced public access to the Stiltsville structures, (ii) consideration of continued but limited use of the structures by current occupants, on terms and conditions to be established by the Trust, (iii) stabilization and maintenance of the Stiltsville structures using funds raised for this purpose from public, private and philanthropic sources; and (iv) equitable integration of public and private use of the Stiltsville structures, in recognition of public purposes identified in the Report of May 17, 2001 and such financial contribution to stabilization and maintenance as may be made by current occupants;
4. Effective upon organization of the Stiltsville Trust, the National Park Service and Trust negotiate a mutually agreeable Memorandum of Understanding (or similar), for purposes of accomplishing the Trust’s objectives, and consistent with National Park Service overall responsibilities for management of the natural and cultural resources of the Biscayne National Park;
5. The foregoing occur as expeditiously as possible, in order that the Stiltsville Trust be able to assume its responsibilities for management of the Stiltsville structures pursuant

to an agreed MOU immediately upon completion of the documentation described in paragraph 4; and

6. There is a general understanding and acknowledgement that the foregoing are statements, expressions and recommendations of the parties in their capacities as members of this Committee only, and these statements, expressions and recommendations are not intended to alter, affect or impair the legal rights or standing of the parties, including the current Stiltsville occupants.



**APPENDIX D**

**A PROPOSAL FOR JOINT STEWARDSHIP OF STILTSVILLE AND  
MIAMI'S MARINE ECOSYSTEMS**

**STILTSVILLE AND THE FUTURE OF BISCAYNE BAY**

A Proposal for Joint Stewardship of Stiltsville and Miami's Marine Ecosystems

Submitted to  
The Stiltsville Committee  
of  
The National Park System Advisory Board

By members of  
  
*MAST Academy*  
*Ransom Everglades School*  
and  
*The Rosensteel School of Marine and Atmospheric Science*

May 10, 2001

All workable solutions to environmental preservation involve partnerships between private and public interests and the grand spirit of compromise. The recent history of Stiltsville illustrates that such compromises are possible. At this time, the opportunity exists to capitalize on the “natural capital” of the park by using the fixed structures of Stiltsville to foster education and research, in a manner that will contribute to the body of scientific knowledge and the environmental health of Biscayne Bay, and also enlighten our youth, the stewards and leaders of the future<sup>1</sup>

### Proposal Goal

The aim of this proposal is to suggest that Stiltsville become a base for research and education in a partnership between local schools (initially *Ransom Everglades* and *MAST Academy*) and research institutions (RSMAS: *Rosensteil School of Marine and Atmospheric Science* and NQAA: *National Oceanic and Atmospheric Administration*)

### Proposed Uses for Stiltsville Structures

1. Attach *Seakeepers*<sup>1</sup> research data station to Stiltsville structure.
2. Provide a base for education and research programs in the flats and Tidal flow areas of Stiltsville.

#### *Research Applications*

- The data gleaned by the *Seakeepers* module would be forwarded to a central database and made available for use by scientists and educators worldwide via internet connection.<sup>2</sup>
- This data station would complement one already stationed at the RSMAS dock in Bear Cut as well as a proposed station outside of Ransom Everglades Upper School, on the western side of the Bay. Applications of this data include long term monitoring of the Bay’s health and guidance for city planning and environmental policy.
- School groups would participate in long-term sampling and ecosystem surveys that could be of value for research institutes like RSMAS and NOAA.

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<sup>1</sup> Notably, this data would be extremely valuable for educators, enabling them to set up real world applications and activities in sciences and mathematics.

<sup>2</sup> Notably, this data would be extremely valuable for educators, enabling them to set up real world applications and activities in sciences and mathematics.

### *Educational Applications*

- In a guided partnership with both RSMAS, NOAA, and The National Park Service, students would participate in applied curriculum in marine and life sciences, physics, chemistry, and mathematic

### Longer Term Potential

#### *Community Benefits*

- Since both schools represent some of the best and the brightest students in Miami, educating these youths about the local ecology and environment means enlightening our future civic leaders and prominent citizens. Perhaps of equal importance would be the fact that ecosystem surveys done by these schools are not grant dependent, and transitory as is much science, research at the university level. These schools could contribute long-term studies that would be of immense value to the body of scientific research.

#### *Outreach*

- Through Ransom Everglades, *Summerbridge Miami*<sup>3</sup> could be incorporated into the proposed Stiltsville educational enterprise. This is a worthy goal, welcoming another aspect of the community and fostering the seeds of stewardship and environmental responsibility. Of course, these students could also participate in environmental surveys that would be of significant research value.

#### *“Camping” Programs*

- At some time in the future, it would seem feasible to begin developing an environmental education program, run with the Parks Service, that reaches out to enlighten the city population about Bay ecology and environmental responsibility. Two-day overnight programs could be the start of outreach into the public schools and into the community in general.

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<sup>3</sup> Part of Ransom Everglades' program of outreach involves housing (on campus) the Summerbridge Miami office. The Miami arm of this national program provides tutoring, summer courses, guidance, and mentoring for talented inner-city youth all year round but especially over the summer months when students are out of school.

## Potential Obstacles

### *Access*

- Clearly, educational programs cannot proceed without access to the Stilt houses. This means a boat capable of carrying a large group of people to the site. Fortunately, programs run through the Outreach Office of RSMAS can employ University of Miami dive personnel and local boat charters to access the area. In the case of Ransom Everglade the school has proposed to purchase an outboard skiff capable of carrying up to eighteen persons.

### *Environmental impact*

- Allowing class-sized groups of students access to the Stiltsville flats and marine environment holds the possibility of environmental damage. Students must be educated as to the proper way to conduct research and experimentation. The guidance of RSMAS and the National Parks Service will be crucial in minimizing the risk of negative impact.

## Conclusion

Stiltsville is an ideal place for conducting programs of research, education, and outreach. The unique fixed structures would provide boat dockage, research and data station bases, and classrooms. A partnership of RSMAS, Ransom Everglades, and MAST Academy will strive to educate our future leaders and conduct essential environmental research while being sensitive to the natural environment of the park. Therefore, we persons listed below submit this proposal to *The Stiltsville Committee on Alternative Uses*.

*Dr. Jay Calkins, Science Department Chair, Ransom Everglades School*

*Dr. Tim Dixon, Professor, University of Miami*

*Dr. Henny Groeschel, Scientist, RSMAS-MGG, University of Miami.*

*Barbara Lester, Director of Marine Programs, Science Department, Ransom Everglades School*

*David Skipp, [add title here, David]*

*Steve Wermus, English Teacher, Waterfront Director, Ransom Everglade School*

*Dr. Rod G. Zika, Professor and Chairman, RSMAS, University of Miami; Chief Scientist, International Seakeepers Society.*

## Appendix

[Seakeepers brochure or info summary and sample lesson plans here]

TO: Members of the National Park Advisory Board s Stiltsville  
Committee

FROM: The *SEABay* (Stewardship, Education, and Awareness of Our  
Bay) *Partnership*

RE: Proposed Alternative Uses for Stiltsville Structures

DATE: September 24, Keys Gate Golf & Tennis Club, Homestead, Florida

The *SEABay Partnership* was founded to address the issue of alternative uses for the Stiltsville houses and has as its mission the stewardship of Biscayne Bay. This consortium formed by private and public school educators in partnership with University of Miami scientists, proposes that the Stiltsville area become a hub for marine research bay monitoring, and education.

Initially, we propose that:

1. Stiltsville become part of a worldwide data network as the site of an *International Seakeepres Society* data station.

The *Seakeepers* model data station collects minute-by-minute information on weather, water temperature, salinity, dissolved oxygen, and other parameters. After collection, these data are made available to educators and scientists through a worldwide internet connection. The *Seakeepers Society*, also known as the International Society for Ocean Monitoring and Research (ISOMAR) is headquartered at the University of Miami *Rosensteil School of Marine and Atmospheric Science* (RSMAS) and the program partners with the *National Oceanic and Atmospheric Administration* (NOAA). The data will provide a long-term, continuous profile of the health and characteristics of the Bay.

2. Stiltsville become a base for research and education. The fixed structures will provide a stable center from which to implement studies and educational programs involving local public and private schools and the community at large.

Under the guidance of personnel from RSMAS and the National Park Service, school and community groups will perform valuable, long-term studies of the Safety Valve area that surrounds Stiltsville. Carefully supervised educational programs will plant the seeds of environmental responsibility in our youth, the future leaders of this community. Developing a sense of stewardship in our school children is essential, especially as our bay ecology faces the increasing pressure of rapid population growth.

3. SeaBay Partnership be established as a permanent foundation. The Foundation will provide the proper vehicle for managing the SeaBay program and attracting support necessary to cover the costs associated with this ambitious plan.

## REFERENCES

The *SeaBay Partnership* is currently drafting a detailed, formal proposal on research and educational uses for the Stiltsville area. At this early stage, we ask the blessing of the Stiltsville Committee to develop our concept and seek an indication from the Committee of its willingness to consider such a proposal.

Respectfully yours,

***The SEABay Partnership***

*Dr. Jay Calkins*, Science Department Chair, Ransom Everglades School.

*Barbara Lester*, Director of Marine Programs, Science Department, Ransom Everglades School.

*Steve Wermus*, English Teacher and Waterfront Director, Ransom Everglades School.

*David Skipp*, Class of 71, trustee and chair of the Committee on Policy and Planning, Ransom Everglades School.

*Dr. Tim Dixon*, Professor, RSMAS-Marine Geology & Geophysics, University of Miami.

*Dr. Henny Groeschel*, Scientist, RSMAS-Marine Geology & Geophysics, University of Miami; Founding Scientist, Project INSTAR.

*Adele Tallman*, Research Associate, RSMAS-Marine Biology & Fisheries, University of Miami.

*Dr. Rod G. Zika*, Professor, RSMAS-Marine & Atmospheric Chemistry, University of Miami; Chief Scientist, International *Seakeepers* Society.

*Mark Tohulka*, Environmental Science Teacher, MAST Academy, Miami-Dade County Public Schools.

*Pam Schlachtman*, Science Coordinator, South Dade High School, Miami-Dade County Public Schools.

*Kirsten Schwarte*, Science Teacher, Center for Environmental Education — Crandon Park, Miami-Dade County Public Schools

*Mabel Miller*, Environmental Educator and Activist, Key Biscayne, Florida

## APPENDIX E SPECIES OBSERVED OR RECORDED IN THE STILTSVILLE REGION OF BISCAYNE NATIONAL PARK

Common Name	Scientific Name	Eggs	Larvae	Juveniles	Adults
Shrimp Fishery Management Unit					
Brown shrimp	<i>Penaeus aztecus</i>			X	X
Pink shrimp	<i>Penaeus duorarum</i>			X	X
White shrimp	<i>Penaeus setiferus</i>			X	X
Royal red shrimp	<i>Pleoticus rebustus</i>			X	X
Seabob shrimp	<i>Xiphopenaeus kroyeri</i>			X	X
Spiny Lobster Management Unit					
Spiny lobster	<i>Panulirus argus</i>	X	X	X	X
Red Drum Management Unit					
Red drum	<i>Sciaenops ocellatus</i>		X	X	X
Snapper Grouper Management Unit					
Balistidae - Triggerfishes					
Gray triggerfish	<i>Balistes capriscus</i>	X	X	X	X
Queen triggerfish	<i>Balistes vetula</i>	X	X	X	X
Carangidae - Jacks					
Yellow jack	<i>Caranx bartholomaei</i>			X	X
Blue runner	<i>Caranx crysos</i>			X	X
Crevalle jack	<i>Caranx hippos</i>			X	X
Bar jack	<i>Caranx ruber</i>			X	X
Greater amberjack	<i>Seriola dumerili</i>		X	X	X
Lesser amberjack	<i>Seriola fasciata</i>			X	X
Almaco jack	<i>Seriola rivoliana</i>			X	X
Banded rudderfish	<i>Seriola zonata</i>			X	X
Ephippidae--Spadefishes					
Atlantic spadefish	<i>Chaetodipterus faber</i>			X	X
Haemulidae - Grunts					
Black margate	<i>Anisotremus surinamensis</i>			X	X
Porkfish	<i>Anisotremus virginicus</i>			X	X
Margate	<i>Haemulon album</i>			X	X
Tomtate	<i>Haemulon aurolineatum</i>			X	X
Smallmouth grunt	<i>Haemulon chrysargyreum</i>			X	X
French grunt	<i>Haemulon flavolineatum</i>			X	X
Spanish grunt	<i>Haemulon macrostomum</i>			X	X
Cottonwick	<i>Haemulon melanurum</i>			X	X
Sailors choice	<i>Haemulon parrai</i>			X	X

## REFERENCES

Common Name	Scientific Name	Eggs	Larvae	Juveniles	Adults
White grunt	<i>Haemulon plumieri</i>			X	X
Blue stripe grunt	<i>Haemulon sciurus</i>			X	X
Lutjanidae--Snappers					
Queen snapper	<i>Etelis oculatus</i>			X	X
Mutton snapper	<i>Lutjanus analis</i>			X	X
Schoolmaster	<i>Lutjanus apodus</i>			X	X
Blackfin snapper	<i>Lutjanus buccanella</i>			X	X
Red snapper	<i>Lutjanus campechanus</i>			X	X
Cubera snapper	<i>Lutjanus cyanopterus</i>			X	X
Gray snapper	<i>Lutjanus griseus</i>			X	X
Mahogany snapper	<i>Lutjanus mahogoni</i>			X	X
Dog snapper	<i>Lutjanus jocu</i>			X	X
Lane snapper	<i>Lutjanus synagris</i>			X	X
Silk snapper	<i>Lutjanus vivanus</i>			X	X
Yellowtail snapper	<i>Ocyurus chrysurus</i>			X	X
Vermilion snapper	<i>Rhomboplites aurorubens</i>			X	X
Malacanthidae--Tilefishes					
Sand tilefish	<i>Malacanthus plumieri</i>			X	X
Serranidae--Sea Basses and Groupers					
Rock hind	<i>Epinephelus adscensionis</i>			X	X
Graysby	<i>Epinephelus cruentatus</i>			X	X
Speckled hind	<i>Epinephelus drummondhayi</i>			X	X
Yellowedge grouper	<i>Epinephelus flavolimbatus</i>			X	X
Coney	<i>Epinephelus fulvus</i>			X	X
Red hind	<i>Epinephelus guttatus</i>			X	X
Goliath grouper	<i>Epinephelus itajara</i>			X	X
Red grouper	<i>Epinephelus morio</i>			X	X
Nassau grouper	<i>Epinephelus striatus</i>			X	X
Black grouper	<i>Mycteroperca bonaci</i>			X	X
Yellowmouth grouper	<i>Mycteroperca interstitialis</i>			X	X
Gag	<i>Mycteroperca microlepis</i>			X	X
Scamp	<i>Mycteroperca phenax</i>			X	X
Yellowfin grouper	<i>Mycteroperca venenosa</i>			X	X
Sparidae—Porgies					
Sheepshead	<i>Archosargus probatocephalus</i>			X	X
Grass porgy	<i>Calamus arctifrons</i>			X	X
Jolthead porgy	<i>Calamus bajonado</i>			X	X
Saucereye porgy	<i>Calamus calamus</i>			X	X



Common Name	Scientific Name	Eggs	Larvae	Juveniles	Adults
Whitebone porgy	<i>Calamus leucosteus</i>			X	X
Knobbed porgy	<i>Calamus nodosus</i>			X	X
Labridae--Wrasses					
Hogfish	<i>Lachnolaimus maximus</i>		X		
Puddingwife	<i>Halichoeres radiatus</i>			X	
Coastal Migratory Pelagic Management Unit					
Cero	<i>Scomberomorus regalis</i>			X	X
Cobia	<i>Rachycentron canadum</i>			X	X
Dolphin	<i>Coryphaena hippurus</i>			X	X
King mackerel	<i>Scomberomorus cavalla</i>			X	X
Little tunny	<i>Euthynnus alletteratus</i>			X	X
Spanish mackerel	<i>Scomberomorus maculatus</i>			X	X
Coral, Coral Reefs, and Live/Hard Bottom Habitat*					
Coral belonging to the class Hydrozoa (fire corals and hydrocorals).		X	X	X	X
Coral belonging to the class Anthozoa, subclass Hexacorallia, orders Scleractinia (stony corals) and Antipatharia (black corals).		X	X	X	X
Seafan, <i>Gorgonia flabellum</i> or <i>G. ventalina</i>		X	X	X	X
Coral in a coral reef, except for allowable octocoral Coral in a habitat area of particular concern including allowable octocoral.		X	X	X	X
Live rock means living marine organisms, or an assemblage thereof, attached to a hard substrate, including dead coral or rock (excluding individual mollusk shells).		X	X	X	X

\*Corals (hard and soft corals) found primarily under existing structures and in footprints of former structures; see “Biological Resources” section for complete listing of corals observed at Stiltsville.

## **APPENDIX F**

### **LETTER FROM THE KEEPER OF THE NATIONAL REGISTER OF HISTORIC PLACES**

United States Department of the Interior  
NATIONAL PARK SERVICE  
1849 C Street NW  
Washington, D.C. 20240

In reply refer to: H32(2280)

Janet Snyder Matthews  
State Historic Preservation Officer  
Director, Division of Cultural Resources  
Department of State  
R. A. Gray Building, 500 S. Bronough Street  
Tallahassee, FL 32399-0250

Katherine H. Stevenson  
Associate Director, Cultural Resource Stewardship and Partnerships  
National Park Service  
1849 C Street, NW  
Washington, DC 20240

Dear Ms. Matthews and Ms. Stevenson:

We have carefully reviewed the nomination for Stiltsville submitted to us by your offices. As you know, this nomination is a modified version of the nomination submitted to the National Register in February 1999 and rejected in March 1999. The property was originally nominated as a district, with significance claimed under Criterion A, in the area of recreation and culture, and under Criterion C, for architecture, and Criteria Consideration G, for properties that were constructed within the last 50 years. The period of significance began in 1960 and ended in 1965. The principal change is that the present nomination claims significance for Stiltsville under National Register Criterion A in the areas of entertainment/recreation and community planning and development as a traditional cultural property, and does not include the earlier claim that the present buildings themselves are significant for their architecture. Other modifications reflect this new argument, including the expansion of the period of significance to 1937 to the present, and the assertion that the property does not have to meet the requirements of Criteria Consideration G. Because the other questions are dependent on the eligibility of Stiltsville as a traditional cultural property, this letter will concentrate on that critical issue.

The National Register bulletin Guidelines for Evaluating and Documenting Traditional Cultural Properties defines a traditional cultural property as "one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important to maintaining the continuing cultural identity of the community." The bulletin defines "culture" as the "traditions, beliefs, practices, lifeways, arts, crafts, and social institutions of any

community.” It defines “traditional” as referring to “those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice.” Stiltsville does not meet the definition of a traditional cultural property.

The documentation does not clearly define the community with which Stiltsville is associated. It does not identify the cultural practices or beliefs associated with Stiltsville, indicate how these practices and beliefs can be considered traditional, or explain why they are important in maintaining the community’s cultural identity. Although it suggests that the community generally includes the entire “Biscayne Bay area” (page 8/10) or the “people and communities around Biscayne Bay” (page 8/11), the nomination lacks the citations of ethnographic, ethnohistorical, folklore, or other studies that are usually required to identify the community, to define the traditional cultural beliefs, practices, etc., and to explain the ways in which they are critical to maintaining the cultural identity of that community.

The nomination does not provide convincing evidence of the long-term significance of Stiltsville. The documentation includes many letters and other appreciative comments from visitors to Stiltsville in the 1950s and 60s. It also contains evidence that the importance of this place was in dispute. During its “hot spot” days, some local residents wanted Stiltsville removed, regarding it as a “menace to property to the north of Cape Florida and the west on the mainland” (quoted on page 8/4). In the 1950s, residents of Key Biscayne saw Stiltsville as an eyesore inhabited by “squatters” who did not pay taxes (page 8/5). The 1965 decision of the Metro-Dade County Building and Zoning Department to prohibit any new construction on the flats also casts doubt that the importance of the area was commonly understood. According to the nomination, as late as 1976, Bruce Smathers, then Florida’s Secretary of State, called for the eradication of Stiltsville because it was a blight on Biscayne Bay (page 8/8).

The National Register Bulletin on evaluating traditional cultural places specifically states that “significance ascribed to a property only in the last 50 years cannot be considered traditional.” Because the nomination provides no evidence of the cultural importance of Stiltsville to a defined community prior to 1949 and includes evidence of conflicting views on its value since that time, we have concluded that the property does not meet the National Register Criteria for Evaluation as a traditional cultural property.

In our previous comments, we stated that Stiltsville also does not meet National Register standards of exceptional historical or architectural importance that are required for properties that have achieved significance within the last 50 years. According to the nomination, all but one of the houses was rebuilt after the 1965 hurricane; the remaining one was rebuilt after the 1960 hurricane. Only seven houses remain on the flats, the only ones to survive from a collection that once numbered almost 30. None of them has any association with Stiltsville’s early colorful history of semi-illicit commercial clubs. According to the nomination, the institution of the lease system ended the existence of commercial clubs in Stiltsville, as evidenced in a series of 1967 letters. Even the unusual construction techniques used to build the existing houses, designed to resist high winds and mandated by the new building codes introduced after the 1965 hurricane, serve to emphasize the differences between the Stiltsville of the 1990s and that of the 1930s, 40s, and 50s.

Finally, the present documentation nominates Stiltsville as a site. It states:

REFERENCES

*Having small vernacular buildings on the site is vital to the site's integrity. . . If all the houses now on the site blew away in a hurricane tomorrow, the site would retain its visual character if similar houses were built on it afterwards.*

We cannot agree that the historic integrity of Stiltsville has survived the destruction of its historic character-defining buildings. This would be equivalent to saying that if all the 19th century two-story commercial buildings in a historic downtown were torn down and replaced with new ones, the construction of new buildings would restore the historic character of the district as long as they were similar commercial buildings.

Stiltsville therefore does not meet any of the National Register Criteria for Evaluation and is not eligible for listing in the National Register of Historic Places. We are returning the nomination with this letter.

Sincerely,

(signed October 22, 1999)

Carol D. Shull  
Keeper of the National Register of Historic Places  
National Register, History, and Education

Enclosures



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

**UNITED STATES  
DEPARTMENT OF THE  
INTERIOR  
NATIONAL PARK SERVICE**

**Biscayne National Park Team**

Superintendent

9700 S.W. 328th Street

Homestead, FL 33033-5634

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